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ABSTRACT

The first objective of a two-phase project was to clarify the policy rationale and intervention model for state-financed workplace-based retraining programs in terms of their two objectives of retaining jobs and preventing unemployment. The second objective was to develop: (1) an evaluation system for these programs that was composed of business screening guidelines for targeting investment and minimizing substitution effects; and (2) a performance outcome system for measuring program outcomes that are necessary to achieve these two program objectives. In phase one, the project reviewed California's Employment Training Panel and Illinois' Prairie State 2000 Authority and determined that a successful training project should result in these performance outcomes: training objectives, work unit performance, company performance, and trainee earnings. Based on this intervention model, the first phase of the project also developed business screening guidelines that would maximize the effects of training projects on program objectives and minimize substitution problems. The second phase of the study evaluated the feasibility of implementing the evaluation model in four state-financed, workplace-based retraining programs and examined 24 case studies from California, Illinois, Missouri, and New York. The project showed the feasibility of a state evaluation system and made recommendations for a 3-year implementation plan. (Appendices include the following: (1) descriptions of the four state programs; (2) sampling design and methodology; (3) impact evaluation of retraining programs; and (4) 15 references.) (KC)

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EVALUATING STATE-FINANCED, WORKPLACE-BASED RETRAINING PROGRAMS:

A Report on the Feasibility of a Business Screening and Performance Outcome Evaluation System

Research Report 89-08

May 1990

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A Joint Study of the National Commission for Employment Policy and the National Governors' Association

The opinions expressed in this paper are those of the authors and do not necessarily reflect the opinions of the members and staff of the National Commission for Employment Policy, the National Governors' Association, and the organizations and agencies participating in this study.

Preface

This report is divided into two volumes. Volume I describes the proposed business screening and performance outcome evaluation system, our findings regarding the feasibility of the system, and our recommendations for implementation. Volume II is a compendium of 24 case studies that were done to test the feasibility of the screening and evaluation system. They also illustrate the variety of retraining investments made by state governments and provide practical lessons for designing successful retraining efforts.

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This project on state-financed, workplace-based retraining programs was accomplished only through the help and cooperation of many individuals and agencies. The idea for the project was initiated by Kris Coryell, then Chief Executive Officer of Illinois' Prairie State 2000 Authority, and her Board who recognized that the training assistance program operated by the agency posed a unique set of methodological issues for screening and evaluating retraining grants to businesses. She was joined soon by the California Employment Training Panel and Steve Duscha, then Executive Director.

The National Governors' Association gave the project a home by agreeing to sponsor and manage the effort. Evelyn Ganzglass, who managed the project for NGA, provided direction and guidance throughout. She was assisted ably by Debbie Woods.

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EXECUTIVE SUMMARY

Since the 1960s, states have created customized training programs as part of their economic development efforts to attract, expand, and retain businesses. Unlike traditional employment and training programs that focus on individuals and specific target populations, state-financed customized training programs are mainly economic development programs. They emphasize business training needs and the use of state training funds in increasing and retaining jobs for the state. Most recent studies estimate that 46 states now have one or more customized training programs.

State-financed, customized training programs emerged in the 1960s and 1970s as part of state efforts to attract new businesses to the state and promote employment expansion in existing businesses. These state programs focused on training unemployed or newly hired workers for new jobs. State-financed, workplace-based retraining programs, that is, programs that focus on business retention and the retraining of existing employees are a phenomenon of the 1980s. During the last decade, business retention and employee retraining have become significant components of most customized training programs.

State-financed, workplace-based retraining programs have been established on the assumption that the most effective way to address unemployment problems in states is to prevent them in the first place. These programs are operated with the mandate to minimize the incidence of unemployment and retain jobs by retraining employees who are at risk of losing their jobs because of changing skill requirements in the workplace.

The increased emphasis on business retention and employee retraining is a response to a broad array of industry and labor force changes. It is also a response to the growing demands of in-state businesses for the same types of training assistance provided to new and expanding businesses.

Growing business interest in retraining programs and the resulting demands for more public funds have raised important policy questions about the role and effectiveness of state-financed, workplace-based retraining programs in state economic development efforts. Critics of these programs argue that there is no clear policy rationale and intervention model that explain how these programs will retain jobs and minimize unemployment. They argue that there is no formal evaluation system for assessing whether retraining is effective in reaching these objectives. In addition, they argue that training funds are given to companies that would have retrained their employees without government assistance. In other words, public funds merely are substituted for company funds which would have been spent for retraining even without the involvement of state programs.

As state-financed, workplace-based retraining programs grow and mature, it is reasonable to assume that these policy and evaluation issues will become more important to state policy-makers. It is likely that in the near future state agencies will be required to evaluate the effectiveness of their training investments in reducing unemployment and retaining jobs.

Phase One

The first objective of this project was to clarify the policy rationale and intervention model for state-financed, workplace-based retraining programs in terms of their twin objectives of retaining jobs and preventing unemployment. The second objective was to develop an evaluation system for these programs that was comprised of:

- Business screening guidelines for targeting training investment and minimizing substitution effects.
- Performance outcome system for measuring program outcomes that are necessary to achieve these two program objectives.

In phase one, the project developed a policy rationale and intervention model for these programs based on a review of two programs--California's Employment Training Panel and Illinois' Prairie State 2000 Authority. Ideally, state-financed, workplace-based retraining programs are designed to reduce unemployment and retain jobs by:

- Improving business performance and the competitive standing of the business within its industry.
- Providing marketable skills to retrained workers.

Because of their strong economic development focus, these programs put their major emphasis on improving business performance. They are based on the assumption that employee retraining reduces the incidence of unemployment and retains jobs by improving the productivity of workers. In turn, worker productivity is a function of both worker skills and the integration of these skills into a productive workplace that incorporates appropriate process technologies, job design, labor-management relations, compensation systems, and employment security policies. To be successful, employee retraining must be integrated with larger workplace changes that are intended to improve work unit or company performance.

However, state-financed, workplace-based retraining programs, as employment and training programs, should minimize the likelihood of future unemployment of retrained workers by helping them gain marketable skills. In some cases, retraining projects will not be associated with improvements in business performance. By establishing the attainment of marketable skills as a condition, state programs provide retrained workers with an additional assurance that future unemployment will be minimized as a result of their participation in the retraining project.

In combining both company performance and workers' skills as basic conditions, a successful training project is expected to result in the following performance outcomes (see Figure 1, Chapter 2):

- **Training (Behavioral) Objectives.** Retrained workers have attained behavioral skill objectives that are designed to improve work unit or company performance and enhance the employment opportunities of workers outside the company.

- **Work Unit Performance.** Worker retraining is associated with improved performance of the work units that participated in the training project.

- **Company Performance.** Worker retraining and associated improvements in work unit performance are related to improvements in company performance.

- **Trainee Earnings.** Worker retraining results in stable or improved employment and earnings for retrained workers.

Based on this intervention model, the first phase of the project also developed business screening guidelines that would maximize the effects of training projects on program objectives and minimize substitution problems. The screening guidelines were based on the assumption that retraining projects will have their greatest effect when:

- Worker retraining is integrated into larger company plans to improve company performance and maintain or enhance its competitive standing within its industry.

- Worker retraining is a critical factor in improving company performance because of significant changes in skill requirements.

- Retraining provides workers with transferable skills that are likely to be in high demand in their respective labor markets.

- Businesses are unlikely to undertake the retraining without outside intervention such as government assistance.

Seven screening guidelines were developed from these assumptions. As shown in Figure 2 (Chapter 2), these seven guidelines included three guidelines addressing company strategies and performance objectives and skill requirements. The remaining four guidelines addressed substitution screening.

These business screening guidelines and the four performance outcome objectives constituted the formative evaluation model that was assessed in phase two of the project. The evaluation model is presented in Figure 3 (Chapter 3).

Phase Two

The second phase of the study addressed the feasibility of implementing the evaluation model in four state-financed, workplace-based retraining programs. These programs were: (1) California's

Employment Training Panel, (2) Illinois' Prairie State 2000 Authority, (3) Missouri's Customized Training Program, and (4) New York's Economic Development Skills Training Program. The feasibility study was based on 24 case studies of training projects funded by the four state programs. The study also involved related research activities on business training and evaluation practices and the availability of necessary industry and labor market information.

This second phase addressed four major feasibility questions. The findings on each feasibility question are summarized below.

- **Business Training Design and Evaluation.** Is the system compatible with business practices in training design and evaluation?

The proposed evaluation system is consistent with widely recognized models of business training design and evaluation for training projects that are intended to improve business performance (see Figure 4, Chapter 4). The evaluation system is consistent with what many training and development professionals recommend is the most appropriate way for businesses to plan and evaluate their own training investments. The only major difference between the evaluation model and recommended business practice is the model's emphasis on trainee earnings.

- **Definition and Measurement of Performance Outcomes.** Can the four performance outcome indicators (company performance, work unit performance, training objectives, and trainee earnings) be measured in a valid and reliable manner that is consistent with business performance measures and data collection activities?

The case studies of 24 training projects in the four state programs suggest that company or work unit performance outcome indicators can be easily identified and measured in valid and reliable ways that are consistent with the methods that businesses use to measure their own performance. Consequently, these company or work unit performance measures should not impose extra costs on businesses because businesses normally collect the same information for their own internal purposes.

Also, we conclude that company and work unit performance are best measured in terms of operational objectives and performance targets that are logically linked to business strategies and performance goals (see Figures 5 and 6, Chapter 4). The case studies identified seven major types of operational objectives and performance targets that could be linked to competitive strategies and business goals as well as financial and market performance.

The definition and measurement of training objectives varied widely in the 24 case studies. However, we conclude that all 24 companies could have restructured their training curricula in terms of measurable training or behavioral objectives. Although this requirement would require additional effort from most companies, it is consistent with widely accepted standards of business training design. The benefit of this additional effort is more effective training projects.

Because of validity and reliability problems in employee testing, we conclude

that post-testing requirements should be established. They should be simple and easy to measure and should address behavioral skills directly related to a core set of training objectives.

The use of trainee earnings as a major performance outcome indicator has significant problems because of the wide variation in company compensation systems. It still is useful to track and report the employment and earnings experiences. Data collection costs for businesses as well as state programs can be minimized by using Unemployment Insurance (UI) wage records.

- **Business Screening Guidelines.** Can the evaluation system practically address targeting and substitution problems through a set of business screening guidelines?

Other substitution problems can be addressed through state contractual and in-kind policies that pay for the type of training that companies ordinarily do not undertake on their own initiative. Typically, these training activities include classroom and laboratory training and highly structured on-site training.

The seven screening guidelines can effectively address the most important targeting and substitution problems faced by state programs. Based on the 24 case studies, we found that companies can clearly state competitive strategy (e.g., cost, quality, differentiation), performance objectives, and the need for retraining. In most cases, they can cite industry benchmarks that they must meet to remain competitive. Industry information on competitive benchmarks is available to state programs. They may use this information to work with companies in defining meaningful performance objectives.

In addition, most companies can define training objectives and retraining requirements. The only possible exception is some small companies. State programs can establish simple and inexpensive procedures to establish the marketability of the skills acquired through training projects. Although the substitution guidelines are more difficult to implement, they will be effective in reducing some substitution problems faced by state programs.

The seven screening guidelines can be incorporated effectively into a simple application process that would not require substantial extra work for either businesses or state program staff. The application process and the screening guidelines are summarized and illustrated in Figures 7 and 8 (Chapter 5).

- **Implementation of the Evaluation System.** Can the evaluation system be implemented effectively given the administrative budgets of state programs and the background and training of staff? Would businesses continue to participate in the program?

The proposed evaluation system can be administered effectively without substantial additional costs being incurred by either the business or the program. In order to implement the system, additional staff training will be required. This staff training will be necessary in order to standardize the method for reporting business performance objectives. Most

state staff are trained sufficiently in identifying clear training objectives.

Future business participation is difficult to assess. However, no business voiced objections over specifying business performance objectives or training objectives in future proposals. We propose a simplified application process where each screening and performance outcome issue can be addressed effectively without causing a significant increase in the requirements of the current application procedures now utilized by any of the four state programs participating in the project.

This feasibility study resulted in six major conclusions on the effects of state-financed, workplace-based retraining programs:

1. State training grants generally will expand the scope, shorten the timing, and enlarge the number of workers who participate in training projects.

2. Training projects were most effective when they tied clearly to specific business goals and performance objectives and when the training plan defined clear training or behavioral objectives.

3. State training grants have an important value in overcoming management uncertainty over the importance of retraining workers for the introduction of new technologies and work processes.

4. Substitution risks are lowest when state grants concentrate on the direct instructional costs of classroom and laboratory training.

5. In many cases, company management, especially in small businesses, was uncertain about how to utilize training as an effective agent of strategic change to improve company performance.

6. State programs may play a major catalytic role in encouraging businesses to use training as an agent of strategic change and establish permanent learning systems within companies.

These major findings and conclusions from the feasibility study provide the basis for five recommendations.

1. ***States should adopt the business screening and performance outcome evaluation system as the basis for a more detailed formative evaluation system worked out by each state in conformance with program statutes, policies, and contracting practices.***

2. ***States should establish multi-stage projects that recognize that training may involve multi-year efforts. However, each stage should have intermediate training or performance objectives with all stages justified in terms of final business goals and performance objectives.***

3. ***States should establish special technical assistance programs that would improve access for small businesses to retraining programs. These programs should provide technical assistance in defining competitive strategies and performance objectives as well as training objectives and training design.***

4. ***State programs should implement the formative evaluation system over a two-year implementation period.***

- **Year 1** - Implementation of business screening and performance outcome system with:

a) an evaluation of the effects of system implementation on program operation including business participation, application screening, and contract management, and b) case studies of a representative sample of training projects on company performance and training objectives.

- **Year 2** - Refinement of business screening and performance outcome system with a formal follow-up study of a representative sample of training project on company performance, training objectives, and trainee earnings based on unemployment insurance (UI) wage records.
- **Year 3** - Implementation of the full follow-up system based on a representative sample of training projects and the implementation of a system to track trainee earnings based on Unemployment Insurance (UI) wage records.

5. ***Federal and state governments should cooperate in establishing a resource center for disseminating information on state-funded training projects and their role in improving the competitiveness of industry. The resource center also should provide models of comprehensive training systems that combine basic, occupational, and job-specific training.***

CHAPTER 1

INTRODUCTION AND OVERVIEW

Since the 1960s, states have created customized training programs as part of their economic development efforts to attract, expand, and retain businesses. The purpose of these programs has been to expand and retain employment in states by assisting businesses in training and retraining their workers. Unlike traditional employment and training programs, which focus on individuals and specific populations, state-financed customized training programs are mainly economic development programs. They focus on the training needs of business and the use of state funds to increase and retain jobs for the state. Recent studies estimate that 45 states now have one or more customized training programs (Stevens, 1986; Ganzglass and Heidkamp, 1986; American Society for Training and Development, 1989).

Stevens (1986) observed that state-financed customized training programs emerged in the 1960s and 1970s as part of state efforts to compete with other states for business investment. In most states, they were established as highly flexible, streamlined programs that offered financial incentives to businesses to locate in the state or to expand employment. They were also established to reduce skill shortages and address training needs that public educational institutions could not respond to quickly enough. As a result, these programs have very broad economic development objectives and funding priorities that continue to evolve according to changing economic development priorities and in-state business demand for training assistance.

Although state-financed, customized training programs are similar to each other in their strong economic development and business focus, they differ significantly in their emphasis on business attraction and expansion (i.e., training newly hired workers) versus business retention (i.e., retraining employed workers). State-financed, workplace-based retraining programs--programs that focus most of their resources on business retention and retraining--are a relatively recent phenomenon. However, since the early 1980s, business retention and retraining have become a significant component of most state customized training programs (Stevens, 1986; ASTD, 1989).

This increased emphasis on business retention and employee retraining appears to be a response to a broad array of economic, demographic, and labor force changes that include an aging workforce, increased national and international competition, rapid changes in production and information technologies, chronic

problems in worker dislocation, and lagging private sector investment in human resource development. Such programs also are a response to the growing demands of in-state businesses for the same types of training assistance given to new and expanding businesses.

Growing business interest in retraining programs and the resulting demands for more public funds have raised important policy questions about the role and effectiveness of state-financed, workplace-based retraining programs in state economic development efforts. Currently, these programs are justified on the grounds that they minimize the incidence of unemployment and retain jobs by retraining employees who are at risk of losing their jobs because of changing skill requirements in the workplace. Critics of these programs have argued that there is insufficient evidence to support the claim that retraining is an effective strategy for preventing unemployment and retaining jobs. Many critics are skeptical of the claim that companies would not have retrained their employees without government assistance. Instead, they suggest that public funds are merely substituted for private funds.

As state-financed, workplace-based retraining programs grow and mature, these policy and evaluation issues will become more important to state policy makers. Already, state agencies have been asked to evaluate the effectiveness of their training investments in reducing unemployment and retaining jobs.

Project Background and Study Approach

In 1987, California's Employment Training Panel and Illinois' Prairie State 2000 Authority identified a common interest in developing a formal evaluation system for their retraining projects. Like other retraining programs, these two agencies had worked to clarify funding priorities and develop indicators of program performance. However, these agencies recognized that they would require a more fully developed evaluation system in the future.

Based on the evaluation issues raised by these agencies, the National Governors' Association organized a study to develop and assess an evaluation system for state-financed, workplace-based retraining programs. Through funding from the National Commission for Employment Policy, the National Governors' Association sponsored a two-phased project. The first phase was a study of the policy and evaluation issues for state-financed retraining programs and the development of an evaluation approach that could be assessed and refined through a comparative state study of retraining projects. This resulted in a report entitled ***State-Financed, Workplace-Based Retraining Programs*** (Creticos and Sheets, 1989). This report proposed a formative evaluation approach that was consistent with the policy rationale and program objectives of state-financed workplace-based retraining programs.

The second phase of the project was designed as a feasibility study of the evaluation approach based mainly on case studies of 24 retraining projects in four state programs (see Appendix A). The four state programs participating in the second phase were:

- California's Employment Training Panel
- Illinois' Prairie State 2000 Authority (Employer Training Assistance Program)
- Missouri's Customized Training Program
- New York's Economic Development Skills Program

Although the missions and objectives of these programs are quite similar, they vary considerably in scope, size, funding priorities, selection criteria, and organizational structure. Brief descriptions of these state programs are provided in Appendix A.

The feasibility study was designed to address two important components of an evaluation system: (1) business selection and screening guidelines; and (2) performance assessment based on four types of performance outcome measures: company performance, work unit performance, skill competencies, and wages and earnings.

Feasibility Issues and Structure of the Report

The feasibility study was designed to answer four basic questions about the proposed evaluation system.

- **Business Training Design and Evaluation.** Is the evaluation system compatible with business practices in training design and evaluation?
- **Definition and Measurement of Performance Outcomes.** Can the four performance outcome indicators (company performance, work unit performance, training objectives, and wages and earnings) be measured in a way that is consistent with business performance measures and data collection activities?
- **Business Selection and Screening Guidelines.** Can the evaluation system address targeting and substitution problems in a practical way through a set of business selection and screening guidelines?
- **Implementation Problems of the Evaluation System.** Can the evaluation system be implemented in a cost-effective way given administrative budget constraints and staff training requirements?

Would businesses continue to participate given the additional reporting requirements of the evaluation system?

In Chapter 2, we summarize the business screening and performance outcome evaluation system proposed in the feasibility study. The third chapter addresses the compatibility of the proposed evaluation system with good business practices by comparing it to a generally accepted model of training design and evaluation for business performance improvement. The fourth chapter addresses the feasibility of developing measures for the performance outcome indicators. It also addresses whether these measures are compatible with business measures and data collection activities so that programs avoid imposing additional costs on participating businesses. This chapter uses illustrations from the 24 case studies of training projects. The fifth chapter addresses the process monitoring questions of business selection and screening. The final feasibility question on implementation is addressed in the sixth chapter which focuses on state monitoring activities. The seventh chapter summarizes the major findings and recommendations from the feasibility study.

This report is based in part on the 24 case studies of training projects funded by the four state programs. These case studies are presented in the second volume of this report, entitled, ***Evaluating State-Financed, Workplace-Based Retraining Programs: Case Studies of Retraining Projects.***

CHAPTER 2

THE EVALUATION MODEL: A Proposed Business Screening and Performance Assessment System

The first question addressed in this project was whether it was possible to develop a formative evaluation system for state-financed, workplace-based retraining programs. Because these programs are mainly economic development programs that focus on job retention and the prevention of unemployment, traditional evaluation models do not apply. In addition, state economic development programs generally have not developed evaluation systems that assess the ultimate success of their efforts in retaining jobs.

In this section, we discuss the evaluation system that was developed for the feasibility study. This model represents a general evaluation approach to performance outcomes that is consistent with the policy rationale and objectives of these programs. The foundation of the system is a formal intervention model and a core set of performance expectations that establish whether the program has been successful in retaining jobs and preventing unemployment. It also includes business screening guidelines that are designed to define and support these performance expectations as well as minimize substitution problems. This chapter first reviews the general policy and evaluation issues considered in developing the evaluation model. Then, it discusses the major program objectives and the intervention model used to define performance outcomes. Next is a discussion of the targeting and substitution issues that framed the development of the business screening guidelines. The chapter concludes with an overview of the proposed business screening and performance outcome system for state-financed, workplace-based retraining programs.

Evaluation Systems: Process Monitoring, Performance Assessment, and Impact Evaluation

A comprehensive evaluation system for state-financed workplace-based retraining programs should consist of three types of evaluation activities.

- **Process Monitoring** addresses whether programs are operated in accordance with program objectives and intervention models that are assumed to produce the

desired program effects. Process monitoring determines whether the program is serving the most appropriate clients targeted in the intervention model and whether the program has implemented the intervention model consistently with these clients.

- **Performance Assessment** addresses whether programs have achieved the specific intermediate and final outcomes that are specified in the intervention model. These outcomes are assumed to be the gross outcomes that are necessary to produce the desired program effects. Performance assessment is based on process monitoring activities that determine whether the intervention model was implemented fully with respect to the targeted client population.

- **Impact Evaluation** addresses whether programs have had a significant effect on program objectives. Impact evaluation assesses the validity of the intervention model; i.e., whether performance outcomes actually are linked to the desired effects over and above the effects of other factors. Impact evaluation is based on both process monitoring and performance assessment. It assumes that the intervention model has been implemented as designed and that the basic performance outcomes are being achieved.

Each activity is a necessary precondition for the next. The impact of the program is a function of specific project outcomes; the aggregate effect of these outcomes is linked by theory to changes in measures related to the broad policy goals of the program. In order to determine whether the intervention model is a factor in achieving the outcomes that are observed later, it is essential to monitor the implementation of the model.

The first step in developing a comprehensive evaluation system for state-financed, workplace-based retraining programs is to clarify the major program objectives and intervention model and establish the major performance outcome indicators. The next step is to establish business screening guidelines that support the implementation of the intervention model and performance outcomes and that assist programs in selecting businesses with which the program will have the greatest impact. Then, state programs can shift their attention to developing an impact evaluation approach that will evaluate the intervention model.

Performance assessment and impact evaluation are designed to answer two different types of questions about the effects of public programs. Impact evaluation addresses the most important and fundamental question. For state-financed, workplace-based retraining programs, impact evaluation determines whether a program had a significant effect on retaining business and reducing unemployment over and above the effects of other factors including organizational and technological changes. Also, an impact evaluation will determine whether these changes would have happened in the absence of the state intervention.

In contrast, performance assessments result in statements about whether program interventions are *associated with* significant changes in the intermediate and final performance outcomes that are assumed to result in positive impacts on job retention and the reduction of unemployment.

Although impact evaluation provides a more direct and fundamental evaluation of public programs, it is very difficult to design and implement even in traditional employment and training programs. Impact evaluation is particularly difficult in innovative public programs undergoing continual change due to the formalization of program objectives and the growing sophistication of operating agencies.

The problems of conducting impact evaluations for state-financed, workplace-based retraining programs are summarized in Appendix C. The main body of this report focuses on performance assessment and process monitoring, which directly support a performance assessment system and address major substitution problems.

Program Objectives, Intervention Model, and Performance Outcomes

State-financed, workplace-based retraining programs are designed to reduce unemployment and retain jobs by retraining employees at risk of losing their jobs because of changing skill requirements. Such programs assume that retraining reduces unemployment and retains jobs by improving the productivity of workers. In turn, worker productivity is a function of both worker skills and the integration of these skills into a productive workplace that incorporates appropriate process technologies, good job design, good management-labor cooperation, appropriate compensation systems, and credible employment security policies. To reduce unemployment and retain jobs, retraining must be integrated with larger workplace changes that are intended to improve work-unit or company performance.

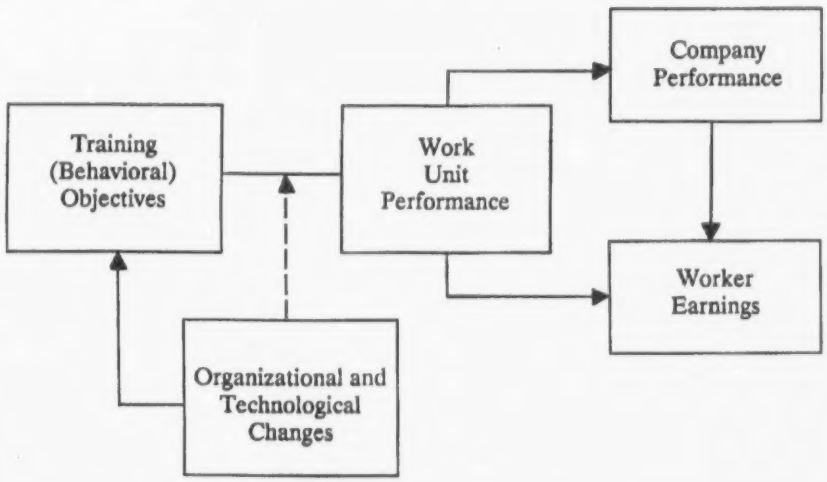
State-financed, workplace-based retraining programs should reduce the likelihood of future unemployment of retrained workers by helping them gain marketable skills. By establishing the attainment of marketable skills as a condition, the state effectively plays to its historical strength in designing and operating employment and training programs. As a consequence, in order for an outcome to be considered successful, it would not be necessary either for a business to improve its competitive position or for its work units to improve their performance. It would be sufficient to show that the retrained workers were more valuable in the marketplace as a consequence of the skills they gained through the program.

As shown in Figure 1, taking both maximum and minimum conditions together, a successful retraining project should result in the following performance outcomes:

- **Attainment of Skills Training Objectives.** Retrained workers have attained specific skills training objectives that are designed to improve work unit or company performance and

Figure 1

Program Intervention Model for Performance Outcome System



enhance the employment opportunities of workers outside the company.

- **Work Unit Performance.** Worker retraining is associated with improved performance of the work units within the company that participated in the training.

- **Company Performance.** Worker retraining and associated improvements in work unit performance are related to improvements in company performance and the overall competitive standing of the company within its industry.

- **Worker Earnings.** Worker retraining results in stable or improved employment and earnings for retrained workers.

These four performance outcomes provide the foundation for the proposed performance assessment system for state-financed, workplace-based retraining programs. In order to implement the intervention model, these measures also require screening guidelines to insure that participating companies can define their projects in terms of these outcomes.

Business Screening and Substitution Minimization

Targeting is the most difficult question faced by state-financed, workplace-based retraining programs: i.e., how to select businesses for financial assistance so as to maximize the impact of the program and to improve the overall health of the state economy. Program impact is a function of: (1) the importance of the business to the state economy, (2) the importance of the training project to the retention of business's or jobs in the state, and (3) the probability that the company would not undertake the training project without state financial assistance.

In proposing possible state program guidelines and administrative procedures for the targeting question, three major evaluation issues were considered: key industry/business identification, business screening, and substitution minimization. As discussed in the first report of this project (Creticos and Sheets, 1989), the targeting of key industries or businesses should be based on the unique economic structure of states, their overall economic development strategies, and the funding priorities and activities of other state agencies. As a result, individual states should decide which industry sectors (e.g., manufacturing versus nonmanufacturing) or which types of businesses (e.g., small versus large businesses) should receive funding priority. This first targeting issue is beyond the scope of this study.

However, state programs can establish guidelines to help them select businesses within a targeted population whose participation in the program is most likely to have a positive effect on program objectives. These guidelines address two basic questions: (1) how does an agency screen and select those companies that are most likely to use state training funds to achieve the performance outcomes that are assumed to result in job retention and the prevention of unemployment, and (2) how does an agency screen and select those companies that would not do the retraining in the necessary scope and timeframe without state assistance?

The intervention model shown in Figure 1 is based on the assumption that retraining projects will have their greatest effects in the following circumstances:

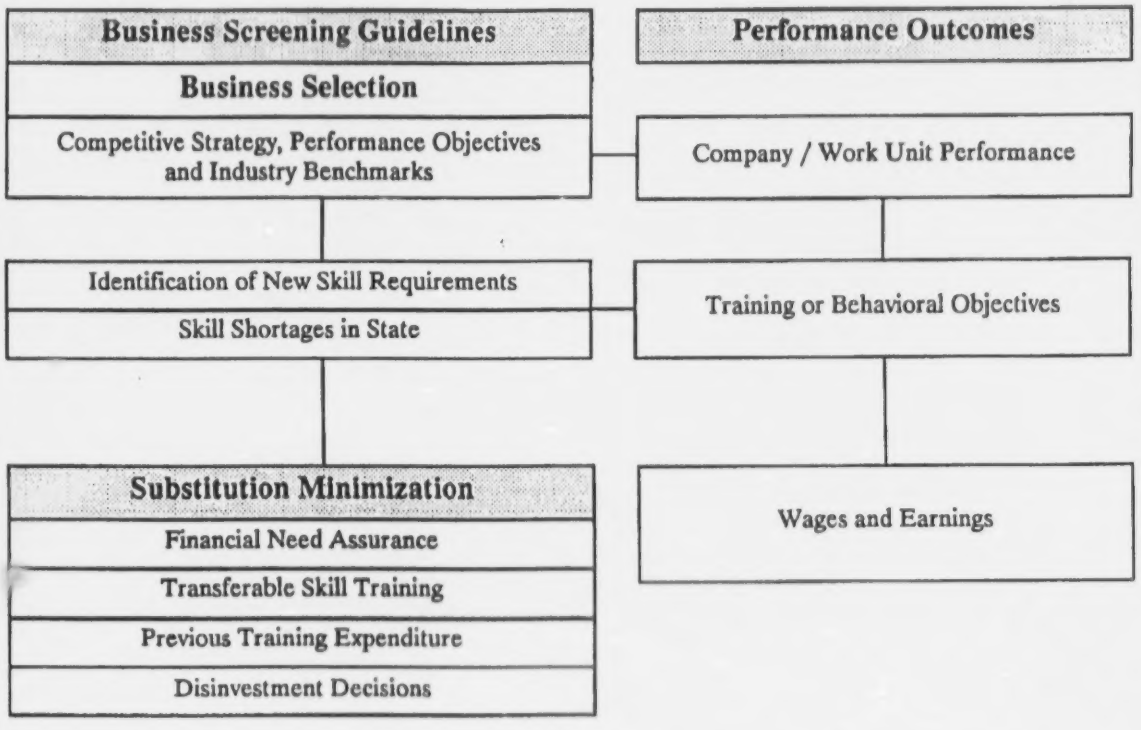
- Worker retraining is integrated into a company's plans to improve its performance and enhance its competitive standing within its industry.
- Worker retraining is a critical factor in improving company performance because of significant changes in skill requirements.
- Worker retraining is integrated into a larger action plan (including technological and organizational changes) that is implemented simultaneously with the training program.
- Retraining provides workers with transferable skills that are likely to be in demand in state or local labor markets.
- Companies are unlikely to undertake the retraining without outside intervention such as government assistance.

These assumptions provide the basis for seven business screening guidelines. Three guidelines address the likelihood that the training project will have a significant effect on the major performance outcomes. Four address the likelihood that these effects can be achieved without major substitution problems. These seven guidelines are presented in Figure 2 and described below.

- **Competitive Strategy, Performance Objectives, and Industry Benchmarks** addresses whether businesses have linked their training projects to strategies and objectives that will make them more competitive in their industries relative to industry benchmarks or competitive standards. This guideline requires that businesses describe how state-financed training will be used to achieve measurable outcomes in company or work-unit performance that will have a material effect on their competitive standing.
- **Identification of New Skill Requirements** addresses whether businesses have defined new functional skills for improving company or work-unit performance that will lead to retaining the jobs of retrained workers. This guideline requires that companies describe such skills and link them to performance objectives. It supports the definition and measurement of the performance outcome addressing training or behavioral objectives.
- **Skill Shortages in State** addresses whether the training project will provide retrained workers with marketable skills that could increase their chances for reemployment if the business is not successful in improving its performance and either closes or reduces the size of its workforce. This guideline is used to estimate the likelihood of reemployment if the first guideline is not successful in selecting those businesses that are highly likely to improve their

Figure 2

Evaluation Model for State-Financed Workplace-Based Retraining Programs



competitive standing through the training project.

- **Financial Need Assurance** addresses whether a company can show that it does not have the resources necessary to conduct a training project of the scope and within the time necessary to achieve its performance objectives. This guideline addresses the problem of direct and simple substitution of public for private training funds.

- **Transferable Skill Training** addresses whether a company is likely to undertake training in light of the substantial investment it would be required to make in transferable (e.g., basic and vocational) skills that are in general demand in the labor market. This guideline attempts to assess whether state assistance is required to offset a company's risk of losing its training investment to other companies. It also assesses the degree to which the training project involves basic and vocational skill training that could alleviate a skills shortage in the state. This guideline is similar to the third guideline except that it focuses more directly on the substitution question.

- **Previous Training Expenditure** addresses whether the business has undertaken previous training projects with similar content and similar types of workers. This guideline is based on the assumption that substitution is greatest when companies have undertaken similar projects before with their own resources.

- **Disinvestment Decisions** addresses whether a company is requesting training assistance because of potential disinvestment and/or layoff decisions from a parent company. This guideline addresses situations in which a business establishment is under pressure to improve its performance or competitive standing in order to remain open but is unable to secure corporate financing to retrain its workers at the necessary level and within the necessary time.

Summary and Conclusions

The proposed evaluation system for state-financed, workplace-based retraining programs is shown in Figure 2. The proposed business screening and performance assessment system consists of seven major business screening guidelines and four performance outcome measures. The following chapters offer a detailed discussion of the findings and conclusions from the feasibility study.

CHAPTER 3

BUSINESS TRAINING DESIGN AND EVALUATION: Models of Training for Performance Improvement

The first major feasibility question is whether the proposed evaluation system for state programs is consistent with the objectives of private sector training and cost-effective training design and evaluation. A state evaluation system should be consistent with how businesses look at their own investments and with what they assume to be necessary planning requirements. This correspondence to private-sector practice is important for two reasons. First, an evaluation system should not discourage or distort business participation in the program. State-financed retraining programs are discretionary grant programs that depend on voluntary business participation. If businesses are asked to submit training proposals that address issues only weakly related to private-sector objectives and planning requirements, qualified companies probably will be discouraged from participating and the transaction costs for the business will increase. However, if the evaluation system is consistent both with business objectives and with exemplary training practices, it will contribute to business understanding of the linkage between training and the improvement of internal operations while it acts as an effective screening device for the program.

Second, if the evaluation system is inconsistent with business objectives and practices, it may distort the original objectives and strategies of the training project and actually work against both the business and the program. It is a common problem in both business and government that what we measure and get rewarded for is what we pay attention to. If the evaluation system asks the company to measure and track information that is unimportant to the purpose of the training, this information may gain sufficient importance to the business to undercut the effective implementation of the project. The proposed evaluation approach and the interview instruments for the case studies were based on models of business training design and current practices in business evaluation.

Training Design for Performance Improvement

Increasingly, business training departments are asked to support specific business strategies and company performance objectives. Employee training thus becomes a strategic agent for change in businesses undergoing major

organizational and technological changes in order to achieve specific performance improvements (Gherson and Moore, 1987; Brinkerhoff, 1989). One widely accepted model of training design for performance improvement is summarized in Figure 3 and described below (Campbell, 1989).

Business Strategy and Performance Objectives. The first step in designing a training project is to understand the company's performance objectives. Are they clearly stated and measurable and are they consistent with the overall business strategy? Performance objectives should be written down and agreed upon for each work unit in which the training and development effort is taking place.

Organizational and Technological Changes, Job Redesign and Training Objectives. The second step of the training model is defining the training or behavioral objectives of the newly designed jobs. In simplest terms, training objectives are the functional skills or job tasks that the trainee should be able to perform after finishing the program. The redesigned jobs should be directly relevant to the performance objectives of the work unit involved in the training program. This is to insure that the planned performance outputs of a trained employee are consistent with and important to the performance objective of the work unit.

Next comes the identification of the training objectives. These objectives include the set of clearly defined functional tasks and behavioral skills that are required of an employee in the redesigned job and that must be learned by a significant percentage of the employees of the work unit.

The final consideration involves identifying the proficiency levels required for each training or behavioral objective. These levels provide the basis for the training department to determine whether the trainees have been successful in reaching the training objectives.

Training Content: Knowledge and Skills. The third step in developing a training project is to specify the knowledge and skills that will permit competent performance of the objectives. This step first involves a definition of the specific training modules needed for each level of knowledge or skill required to meet the training objective. This is followed by decisions about the proper sequence of these modules in the curriculum.

Training Methods, Media, and Conditions. The fourth step is to determine the methods, media, and learning conditions most appropriate for each training module to achieve the objectives of the training project. Instructional methods and media should be selected based on the level and type of knowledge or skill to be produced. For example, knowledge of key terms may be learned most effectively through classroom lectures supported by drill and practice exercises through computer-based instruction. In contrast, a problem-solving skill may be taught better through group discussions and laboratory exercises that call for the desired cognitive and motor skills.

Learning conditions can influence the interest, involvement, and commitment of the trainee. Motivation increases when the trainee understands the purpose of the training in terms of valued outcomes such as job security, money, professional

Figure 3

Training Design for Strategic Change and Business Performance Improvement

Business Strategy and Performance Objectives

What are the business objectives that are expected to be achieved by changing internal operations and retraining employees?

Organizational/Technological Changes, Job Redesign and Training Objectives

What are the functional skill requirements of the newly designed jobs in relation to organizational and technological changes?

What are the specific training (behavioral) objectives of the employee training?

Training Content: Knowledge and Skills

What are the knowledges and skills that an employee must master to perform the behavioral objectives?

What is the most appropriate sequence of these knowledges and skills in a training curriculum?

Training Methods, Media, and Conditions

What are the training methods that are most appropriate for mastering the training content?

What training media are most appropriate in utilizing the selected training method?

What are the most appropriate training conditions for the training content, methods, and media?

Assessment of Individual Differences

What are the basic aptitudes and skills necessary for achieving training objectives?

What prior knowledge and skills do individuals have that could alter training content and/or require differential placement within the curriculum?

What motivational differences exist that could alter the training methods and conditions?

Evaluation of Training Project

Were the training methods, media, conditions successful in providing trainees with the required knowledge and skills?

Were the knowledges and skills successful in reaching the desired proficiencies in training objectives?

Did the training objectives contribute to the achievement of company performance objectives?

opportunities, and release from other paid responsibilities. Motivation and worker commitment may be affected by other factors such as type of trainers, training facility, training schedule, and learning recognition.

Assessment of Individual Differences. The fifth step is to assess individual differences that may affect trainee performance. The most crucial factor is to identify differences in aptitudes, prior knowledge and skills, and task understanding. These may require individualized instruction or advanced placement within the training curriculum. Another issue is to identify individual differences in motivation that may require alternative learning conditions. In some cases, concerns over individual differences may give way to concerns with standardized knowledge and commitment to a company training and performance improvement program (e.g., quality control) or the added cost of testing all employees. In other cases, such as those that involve training in technical skills, formal testing (to determine math and reading levels, for example) may be critical to the success of the program.

Evaluation of Training Project. The final step is the evaluation of the effectiveness of the project based on criteria developed for the specific learning objectives and their contribution to the company's performance objective. These evaluation issues are discussed below.

Training Evaluation in Business

In considering the compatibility of the proposed evaluation approach with evaluation practices in business, two critical issues should be addressed: (1) the types of performance outcomes considered in business evaluation, and (2) the linkage between training objectives and company or work-unit performance.

Levels of Training Evaluation. Business evaluation of training is best understood as addressing one of four levels: (1) trainee reaction, (2) knowledge and skills, (3) job performance, and (4) company performance (Kirkpatrick, 1982).

Trainee reaction refers to the self-reported reaction of the trainee toward the program. This information usually is obtained through questionnaires administered after the training. Knowledge and skills refer to what was learned in specific modules of the training program. Trainees are asked to describe what they know in a written or oral test. They are also asked to demonstrate functional skills in a laboratory or a simulated work setting. Job performance refers to whether the individual can perform satisfactorily the specific set of behavioral skills or functional tasks required on the job. Job performance can be evaluated based on the assessments of

trainers in laboratory and simulated work settings or of supervisors or trainers observing actual performance on the job. Company performance refers to the operating performance of the company. It includes issues such as sales growth, profitability, market share, productivity, quality, and customer satisfaction.

The most common type of evaluation is trainee reaction done largely through post-training questionnaires (Brandenburg, 1989). The second most common type is the evaluation of knowledge and skills usually done through some type of written test. A significant number of companies evaluate job performance through work simulation or ratings of on-the-job performance. A large number of companies evaluate performance through standard sets of performance measures.

Although company performance evaluation is the least common of all evaluation levels, some training and development professionals argue that it is becoming very important in companies because management increasingly uses training as a change agent and wants to know whether performance improved after training (Brinkerhoff, 1989; Swanson, 1989; Campbell, 1987).

Training Objectives and Company Performance. Although the evaluation of a training project in terms of company performance is growing in importance, there still is considerable confusion over the methods that evaluators should use in examining the linkage between training and performance. Training professionals commonly identify at least four major determinants of human performance improvement. These are: (1) the knowledge and skills necessary to perform job requirements, (2) task knowledge and awareness, (3) basic abilities, and (4) motivation to learn and perform (Campbell, 1987).

At best, training departments have direct control only over the improvement of task knowledge and the underlying knowledge and skill necessary to perform the training or behavioral objectives of a job. Training departments vary tremendously in the range of their control over the abilities of trainees and their motivation to learn. These factors usually are controlled by other units within the organization or they represent short-term constraints. In addition, training departments rarely have direct control over job design and other organizational and technological changes that will be combined with the behavioral skills from training to achieve company performance objectives.

However, as presented in the training design model in Figure 3,, many training and development professionals argue that training directors should take responsibility for securing clearly defined training objectives that are consistent with other organizational and technological changes (Brandenburg, 1989; Swanson, 1989, Brinkerhoff, 1989; Campbell, 1987). Training evaluation should not be used in an effort to prove that training *caused* the performance improvement or that a percentage of the performance improvement can be attributed to training (Brinkerhoff, 1989). Rather, the evaluation questions should be: (1) did the training result in the achievement of training objectives, and (2) were these training objectives *associated with* and *necessary for* improvements in company performance.

This perspective is consistent with the evaluation objectives of the proposed business screening and performance assessment system for state-financed, workplace-based retraining programs. This perspective emphasizes that training should be connected logically to a performance objective. In addition, the implementation of the training project should be associated with the achievement of training objectives and the ultimate performance objectives of the work unit or company.

Summary and Conclusions

The evaluation system proposed in this chapter is consistent with one prominent model of business training design and evaluation. In general, the system addresses what training and development professionals suggest is the proper way for businesses to plan and evaluate their own training investments. In addition, the model is applied in some leading businesses that use training as a change agent.

The only difference between the proposed evaluation model and current business practice is that the proposed model emphasizes wages and earnings after training. This issue is explored in the next chapter.

Another unresolved question is whether this business model of training and evaluation actually is used by the businesses that normally receive training assistance from state-financed, workplace-based retraining programs. This also is addressed in the next chapter.

CHAPTER 4

PERFORMANCE OUTCOMES: Company and Work-Unit Performance, Training Objectives, and Worker Earnings

The second feasibility question is whether it is possible to develop performance indicators that are valid and reliable measures of program performance with regard to company performance, work unit performance, skill competencies, and trainee earnings. A related question is whether it is feasible to collect the necessary data at a cost that is acceptable to the company and the state agency and that is lower than the benefits to the program. In this chapter we will examine the feasibility of performance outcomes in the context of state-financed, workplace-based retraining programs.

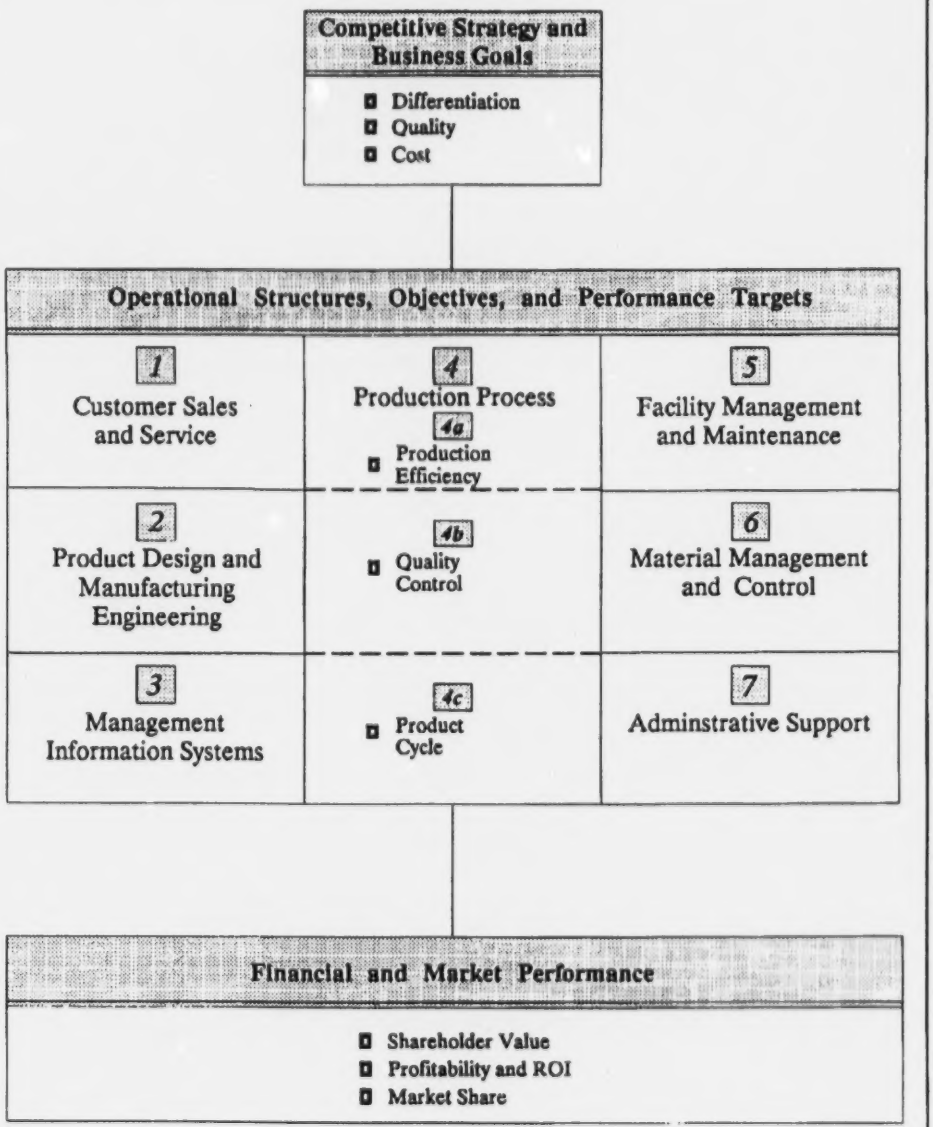
Company and Work-Unit Performance

The evaluation framework for company and work-unit performance is summarized in Figure 4. Essentially, it shows that the financial and market performance of a business are measured by such factors as shareholder value, profitability, return on investment, and market share. The company's overall performance on this dimension is affected by the success of its competitive strategy, i.e., its ability to choose the correct business goals, and its success in attaining them. The competitive strategy and business goals are themselves interpreted in terms of operational structures and objectives that are designed to affect specific performance measures.

Financial and Market Performance. Investor expectations and creditor demands essentially define the financial and market performance goals of a business. In publicly held companies, investor confidence is reflected in the price and volatility of the stock. Banker confidence in either publicly traded or privately held firms is reflected in the interest rates charged on the credit issued to the business. Adverse investor or creditor sentiment towards the company will affect significantly the ability of the company to raise equity in the capital markets, and it will affect the cost of debt in the debt markets. Such sentiment is based on the financial condition and performance of the business and on the assessments of investors or creditors of the ability of the firm to remain financially viable and improve its performance. According to Porter, "competition in an industry continually works to drive down the rate of return on invested capital toward the competitive floor rate of return,

Figure 4

Evaluation Framework for Company/Work Unit Performance Objectives



or the return that would be earned by the economist's 'perfectly competitive' industry. This competitive floor, or 'free market' return, is approximated by the yield on long-term government securities adjusted upward by the risk of capital loss. Investors will not tolerate returns below this rate in the long run because of their alternative of investing in other industries, and firms habitually earning less than this return will eventually go out of business" (Porter, 1986).

Competitive Strategy and Business Goals. Porter (1986) identifies five forces driving industry competition. These affect the strength of competition within the industry and ultimately industry profitability:

- **Industry competitors.** Rivalry among competitors often is regarded as the primary force, sometimes the only force, of competition. It is characterized by tactics like price competition, more intense advertising, new product introductions, improved customer services, or improvements in warranties.

- **Potential entrants.** The risk that there may be new entrants to an industry depends on two factors, barriers to entry and the expected reaction from businesses already in the industry. The barriers may be economic, such as advantages related to scale, or structural, such as government policy. Possible reactions from businesses within the industry, such as price cuts, may create new barriers or may make existing ones more difficult to penetrate.

- **Substitute Products.** Substitute products are items that can perform the same function as those produced by a given industry (e.g., shopping bags may be made out of plastic or paper). Substitute products limit the potential return of an industry by placing a ceiling on the prices that firms in the industry can charge and still earn a profit.

- **Bargaining Powers of Buyers.** A buyer group may exert a strong influence on an industry under certain circumstances by forcing down prices, by demanding higher quality or services, and by encouraging rivalries among competitors who supply the buyer group.

- **Bargaining Powers of Suppliers.** A supplier group also may be a driving force in an industry. In certain instances, suppliers may exert power by threatening to raise prices or by reducing the quality of the products that they sell to the industry. This may squeeze the profit out of the industry receiving the supplies, or it may increase the risk of substitution of products from other industries.

Businesses essentially have four strategic options within this competitive environment. Specific goals may be established, such as market share or sales volume, that act as indicators of the company's success in choosing and implementing the correct strategy. Porter (pp. 35-38) identifies two as product differentiation and product cost.

- Product differentiation creates a perception in the industry that a firm's offering is unique. Various approaches may be taken to differentiating a product, such as design, technology, customer service, or dealer support. In the Metcraft, Inc. case study, the company was focused in part on maintaining a strong reputation in short order-to-delivery lead times and on-time delivery.

- Overall cost leadership may be achieved by relentless efforts to improve operational and production efficiency, tight cost and overhead controls, and avoidance of marginal accounts. In the Northwestern Steel and Simpson Lumber cases, both firms pursued strategies for cutting operational costs and overhead in industries where price is the primary basis for competition. Each faces many competitors producing similar products.

The third strategic option is to pursue quality leadership. Although Porter categorizes quality leadership as an example of product differentiation, we choose to treat it separately because senior executives in virtually every case study cited quality as an important factor in their overall business strategy. In fact, quality was considered to be the primary basis for competition within the industry. For example, the Los Angeles chapter of the National Tooling and Machining Association received financial assistance from the California Employment Training Panel to improve the overall quality of metal mill and lathe work performed by machine operators in the precision metals industry in Los Angeles and Orange counties. The aim was to make the local precision metal industry more competitive in both domestic and world markets.

The fourth strategy, Porter's third one, is focus. Essentially, the business concentrates on a particular segment of the total industry market, using differentiation, cost, and quality strategies to attack the target population. For instance, Harman International Industries decided to pursue the mid- and high-end speaker markets. This required new cabinet-making technologies to produce a speaker box that would be consistent with the quality of sound that the company technically was able to produce. Another example is Manth-Brownell, which, depending on the product line, competes on the basis of quality or price in tightly focused markets. A precision metal turning company, Manth-Brownell performs high-precision, short-production job runs for specialized industries such as gun manufacturers. It also will do low-cost, high-volume manufacturing for businesses in certain targeted industries, such as cable television operators.

Operational Structure and Objectives and Performance Targets. The operational structure and objectives of the firm and related performance targets flow directly from its competitive strategy and business goals. Based on an examination of applications for all cases funded by California's Employment Training Panel and Illinois' Prairie State 2000 Authority, retraining assistance goes to one of seven business functions: customer sales and service; product design and manufacturing engineering; management information systems; production process, including production efficiency, quality

control and product cycle; facility management and maintenance; material management and control; and administrative support.

In each of the 24 cases that we examined, we were able to determine the relationship between the organizational function and the competitive strategy and business goals. We also were able to discern the reasons that this particular function was the subject of attention. For example, Lawrence Box and Basket realized that it was not able to meet demand for its product because its capacity for manufacturing baskets of a certain size was inadequate. Following the acquisition of a new basket-making machine and the training of the operator, the company was able to meet customer demands. Unicadd, Inc. realized that it could not maintain its customer base for computer-aided design and drafting (CAD) services unless it shifted to CADAM, a software package increasingly being used by major manufacturer in the United States.

In another example, United Savings Bank in California determined that although it offered a broad variety of potentially attractive products, it was not sufficiently effective in interesting its Asian customers, the bank's market niche, in these products. As a consequence, bank officials decided to improve their customer sales and service operations by giving sales training to the customer service staff.

In each of the applications or funding synopses that we reviewed covering three years of operations in California and Illinois and one year in New York and Missouri, we were able to determine the operational objectives that were used to justify the training request (e.g., improve product quality, increase sales, reduce down time, etc.). In each of the 24 cases that we studied, companies were able to describe specific performance measures associated with the operational objectives.

For example, Pirelli-Armstrong Tire had to achieve a specific savings in production efficiency as measured by labor productivity (pounds per person) and make other changes in the operation of its Hanford, California, facility or face closure. Northwestern Steel and Wire had to reduce its overall maintenance costs in order to compete with modern American mini-mills. These maintenance costs were measured based on labor costs per ton of steel produced. KLM Industries implemented a new management information system to improve the quality and scope of information available to its operations manager for the moulding department, to reduce its receivables account and to take advantage of discounts offered by its vendors. Possible performance measures include end-of-month balances in the receivables account, savings due to discounts on purchases, average daily cash on hand, and average length of order-to-delivery time (the last also may be considered to be a measure of customer sales and service operations).

Figure 5 lists various operational structures and objectives and possible performance measures. In each of the 24 cases, representatives of the business were able to articulate specific performance measures that would indicate its success in reaching its objectives. In other words, each business was able to describe a means of quantifying a change in performance associated with the operational objectives

Figure 5

Operational Strategies and Performance Objectives: Possible Areas for Developing Performance Measures

1 Customer Sales and Service

Average length of order-to-delivery lead times.

Average variance between quoted and actual delivery date.

Percentage of orders not meeting quoted delivery date.

2 Product Design and Manufacturing Engineering

Average time between receipt of original customer product drawings and the beginning of full production.

Average engineering staff costs in processing original customer drawings for production.

Error rates in manufacturing design and material specifications.

3 Management Information Systems

Turn-around time for the production of standardized financial, accounting and personnel reports.

Average staff costs for the production of standardized financial, accounting, and personnel reports.

Error rates in standard financial, accounting and personnel reports.

4 Production Process

4a Production Efficiency

Material and labor variances (percentage of engineering and cost standards).

Labor utilization (percentage of available labor time utilized in production).

Manufacturing throughput (value of finished products produced per reporting period).

Labor productivity (products produced per employee or per direct labor hour).

Capacity utilization (products produced as percent of planned capacity).

Value-added (value of goods produced-cost of materials) per employee.

Average changeover or set-up time for production runs.

4b Quality Control

Material costs of products scrapped because of variance with quality standards.

Labor costs incurred because of repair or rework of final products.

Material and labor costs contained in products rejected and returned by customers.

4c Product Cycle

Average length of time from limited to full production for product changeovers or new product lines.

Production launch efficiency for product changeovers or new product lines (comparing actual versus planned length of time from limited to full production).

Average quality audit scores and material and labor costs contained in scrapped or reworked products during startup period of the production cycle.

5 Facility Management and Maintenance

Average downtime in production for production units and the facility.

Average response and repair time for unscheduled production maintenance.

Material and labor costs of scheduled and unscheduled maintenance.

6 Material Management and Control

Material costs or work-in-process inventories.

Average difference between planned and actual start and completion dates in production schedules.

Error rates in manufacturing design and material specifications.

7 Adminstrative Support

Turn-around time for the production of standardized financial, accounting and personnel reports.

Average staff costs for the production of standardized financial, accounting, and personnel reports.

Error rates in standard financial, accounting and personnel reports.

that served as the basis for justifying the retraining project.

In summary, we found that in each of the 24 case studies, the project administrator for the business as well as senior management (if different from the project administrator) or the business proprietor in very small enterprises was able to articulate the competitive strategy and business goals of the firm, tie them to an operational structure and specific objectives, and describe specific measures of performance. In every instance, the business was able to demonstrate that it collected data on these measures and used these data to monitor performance. As a consequence, we do not believe that it will add to the burden carried by companies if the state requires that they articulate generally their competitive strategies and business goals, identify specific operational objectives, and describe related performance measures already in use.

Although the path that connects operational objectives with financial and market performance appears to be well marked and direct, it is, in fact, treacherous to follow and very difficult to establish in most cases. Presumably, a company that is able to operate by selling high-quality products at the lowest possible price should do very well in the marketplace. Although this appears to be a necessary condition to sustained financial and market performance, it is not a sufficient condition.

A company that achieves its operational objectives essentially meets the conditions that support the implementation of its competitive strategy. It has produced a product of the quality and at the price it intended. However, other elements affect the outcome of the strategy, such as the market demand for the product and the ability of the company to distribute it cost effectively. The outcome of the strategy, in turn, is but one element in the financial and market performance of the firm. Consequently, states looking for the effects of their investments in retraining will have to be content with tracking changes in specific operational performance indicators.

Training Objectives

The distinguishing feature of customized training programs, including workplace-based retraining programs, is that state funds are used to meet company-specific training objectives. As described in the previous chapter, training objectives refer to the new behavioral skills or work tasks that an individual is required to perform to meet job performance expectations. The evaluation system proposes that training objectives should be defined clearly in a project proposal and be measured after training in terms of the percentage of trainees reaching proficiency levels in each training objective. In reviewing the feasibility of using training objectives as performance outcomes, we first review the types of training and testing done by the 24 companies in the case studies.

Types of Training. Although all of the employee retraining funded by the four state programs in the 24 training projects was customized to company needs, most training projects involved a substantial amount of training in basic skills and vocational and occupational skills that are applicable to a broad range of jobs in other

companies. The type of training in these projects is best described as "functional context education" (Sticht, 1989) or "work-based learning" (U.S. Department of Labor, 1989). The training projects were all designed to transfer new knowledge and skills within the functional context where the learning was to be applied. Almost all training projects involved a training design that integrated classroom instruction and hands-on laboratory training with structured on-site training where skills could be applied on the job. In the classroom component, trainees continually were given examples and illustrations of new concepts and practices based on well-known, current work experiences.

As shown in Figure 6, the types of training can be classified into basic skills training, vocational or occupational skills training, and firm-specific skills. Basic skills include a wide range of areas identified by the American Society of Training and Development in their report, ***Workplace Basics: The Skills Employers Want***. These include group communication skills, problem-solving skills, team-building, and applied math. Some basic math education (e.g., trigonometry, algebra, etc.) was included in blueprint reading courses. Basic skills training also includes computer or machine orientation for employees not familiar with modern technology in the workplace. Finally, basic skills include business education; i.e., training employees to understand the competitive pressures in their industry and the basics of business finance and operation so that they can better understand the company's reasons for the retraining project.

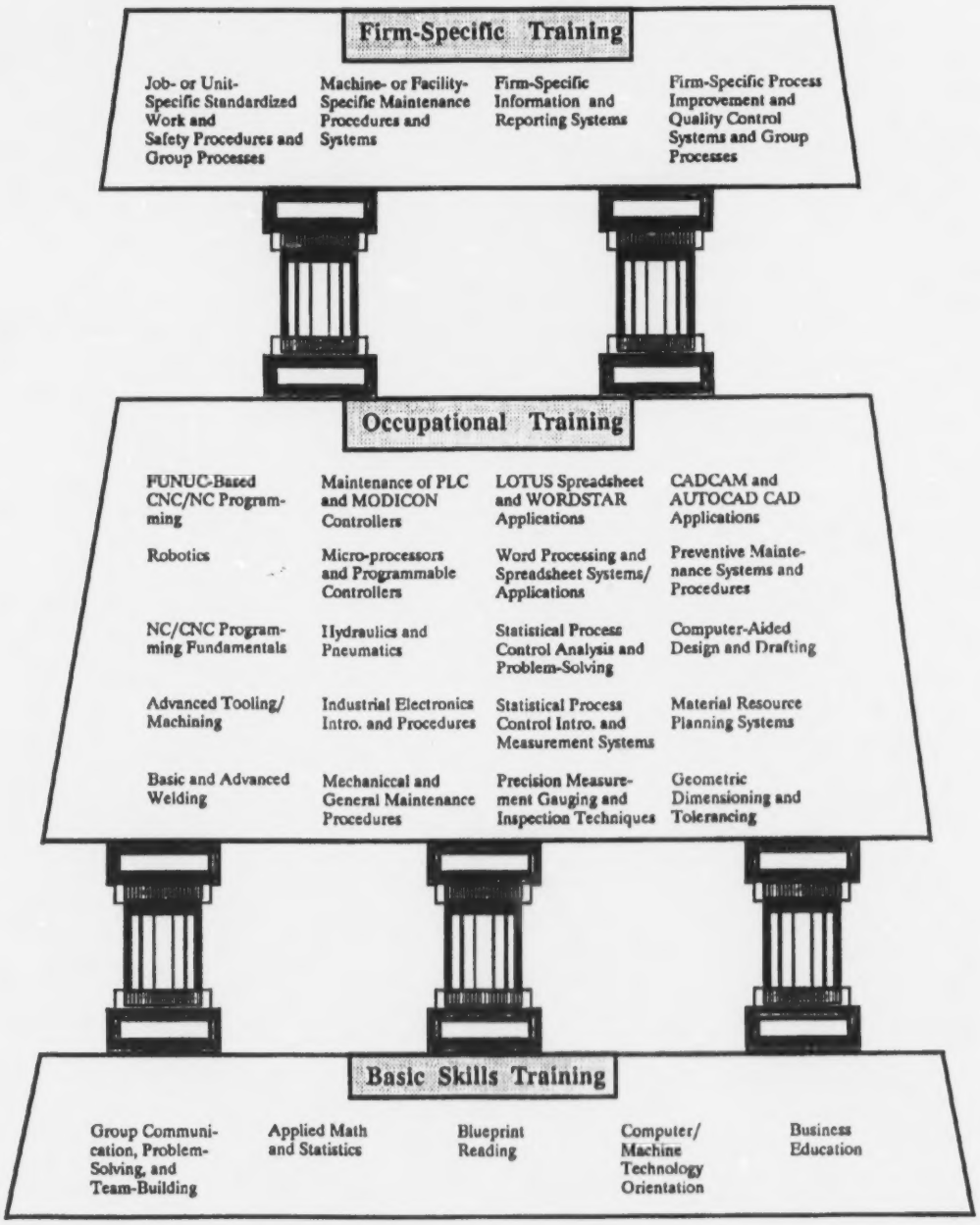
Basic skills instruction was a component in almost all training projects. Usually, it was integrated with occupational training. Examples of extensive basic skills training include the shop math training conducted by Dresser-Rand in New York and Solar Turbines in California.

The vocational and occupational training corresponded very closely to the instructional materials used by public educational institutions such as vocational-technical centers and community colleges. Examples of this type of occupational training can be seen in the extensive vocational curriculum used by New United Motors Manufacturing, Inc. (NUMMI) and General Motors-Wentzville in skilled trades training for maintenance employees and the CNC training provided by the Los Angeles chapter of the National Tooling and Machining Association.

The kinds of firm-specific training varied greatly in their transferability to other companies. The classic example of nontransferable skill training is standardized work. In standardized work, employees are instructed on a sequence of specific job tasks that they should carry out on a routine basis. This type of training involves limited classroom instruction, usually with visual aids and physical demonstrations. Sometimes this type of training was integrated systematically with continual process improvement and safety training. For example, NUMMI received a training grant in 1987 from the Employment Training Panel to retrain assembly workers in standardized work and in Kaizen, a widely used Japanese approach to continual process improvement. The training program also included ergonomics and safety training. Clearly, the specific job tasks learned by trainees were unique to NUMMI and the assembly process utilized for that product

Figure 6

Types and Examples of Training in State-Financed Workplace-Based Training Programs


Firm-Specific Training
Job- or Unit-Specific Standardized Work and Safety Procedures and Group Processes
Machine- or Facility-Specific Maintenance Procedures and Systems
Firm-Specific Information and Reporting Systems
Firm-Specific Process Improvement and Quality Control Systems and Group Processes
Occupational Training
FUNUC-Based CNC/NC Programming
Maintenance of PLC and MODICON Controllers
LOTUS Spreadsheet and WORDSTAR Applications
CADCAM and AUTOCAD CAD Applications
Robotics
Micro-processors and Programmable Controllers
Word Processing and Spreadsheet Systems/ Applications
Preventive Maintenance Systems and Procedures
NC/CNC Programming Fundamentals
Hydraulics and Pneumatics
Statistical Process Control Analysis and Problem-Solving
Computer-Aided Design and Drafting
Advanced Tooling/ Machining
Industrial Electronics Intro. and Procedures
Statistical Process Control Intro. and Measurement Systems
Material Resource Planning Systems
Basic and Advanced Welding
Mechaniccal and General Maintenance Procedures
Precision Measurement Gauging and Inspection Techniques
Geometric Dimensioning and Tolerancing
Basic Skills Training
Group Communication, Problem-Solving, and Team-Building
Applied Math and Statistics
Blueprint Reading
Computer/ Machine Technology Orientation
Business Education

model. However, the Kaizen training did provide training in general problem-solving that quickly is becoming a basic and occupational skill requirement for assembly workers.

Training Objectives and Instructional Design. The model of training design described earlier suggests that businesses should first establish clear training or behavioral objectives and then develop training modules based on the types of knowledge or skills required to achieve these objectives. Wherever possible, knowledge and skill should be measured against clearly defined competencies. In general, the type of training funded through state programs is quite consistent with this model. However, the training projects addressed in this study varied considerably in their correspondence to the model.

There was wide variation in the degree to which training objectives were formalized and written down in conjunction with line managers and supervisors and subsequently presented to trainees. In some training projects, the line managers originated the project and established specific training objectives before the project began. In other projects, the training objectives were jointly determined by line management and workers with the support of training staff or an outside training provider. In other cases, the training objectives remained ambiguous until after the training program was underway. In these cases, training objectives were established informally during the application part of the training program, but they could easily be defined by either the line supervisors or the training project director.

In all 24 training projects, businesses, in cooperation with state agency staff, had developed a formal training outline listing a sequence of training modules or activities and the general timelines for each. These outlines varied tremendously in length and amount of detail. For small companies and training projects consisting mostly of structured on-site instruction, the outlines were mainly a list of topics to be covered with each trainee. In large companies and training projects involving a substantial amount of classroom and laboratory training, the outlines were more detailed, indicating both topic modules, training content, and instructional method such as structured on-site training or classroom and laboratory training.

In most cases, the training materials used in the state-funded projects were competency-based, that is, the sets of knowledge and skill competencies required to produce the training were clearly defined. For the purposes of this report, "training objectives" refer to the ultimate behavioral objectives of the projects, and "skill competencies" refer to intermediate training outcomes that must be combined and built on in order to produce the functional skills necessary for successful job performance. In other cases, these competencies were identified easily by the training manager or the instructors but were not formalized in the training materials.

Trainee Post-Testing. Clearly defined and measurable training objectives provide the basis for criterion-referenced post-tests. These tests are the best indicators of the level of job performance that will support the performance objectives of a work unit. They also provide the basis for businesses to evaluate

the services provided by their own training departments or by outside vendors, including public educational institutions.

Businesses conduct post-tests in their training programs for a variety of reasons. Some use post-testing to evaluate the performance of their training departments or outside training vendors. Others do post-testing because they need to know what employees know or can do because of overarching quality control and safety considerations. Finally, some companies do post-testing because of promotion requirements or compensation issues in knowledge-based compensation systems.

Companies utilize three basic methods for conducting post-tests on training or behavioral objectives: (1) job performance is observed by trainers or supervisors, (2) trainees demonstrate skills in a laboratory or a simulated job environment, and (3) trainees report what they've learned. Job performance assessments can be based on the observations of standard work tasks during the normal routines of work or through some type of standardized company reporting system based on productivity or quality of output. Trainee self-reports are usually based on some type of post-training questionnaire in which trainees are asked whether they feel that they are proficient in a list of functional skills or job tasks.

Few training projects in this study used formal post-tests on training or behavioral objectives. Some businesses recognized the need for some type of post-training evaluation but were unsure how to introduce formal testing. Other businesses felt that formal post-testing would be counterproductive. They preferred to get trainee reactions and informal feedback from trainers and line managers.

However, some businesses did formal post-tests on a subset of training objectives. Some used laboratory exercises to test proficiency in functional skills. Others used computer simulations to test proficiency on new computer systems (e.g., MRP training). The most common form of post-testing was written tests on basic skills (e.g., shop math) and general occupational knowledge and skills (e.g., geometric dimensioning and tolerancing, industrial electricity).

Trainee Pre-Testing. Most companies did not conduct formal pre-tests in their training projects. The importance of pre-testing differed significantly according to the type of training project. In projects involving mostly standardized work and structured on-site training, pre-testing was not considered necessary because prior skill requirements were minimal, and the company wanted to make sure that all employees agreed on how best to do a particular job. In other training projects such as quality control and statistical process control, companies saw the need to start all trainees with the basics so that the group could develop a standard knowledge of and commitment to the company's effort to improve performance. In these kinds of training programs, companies wanted to acculturate trainees (employees) to a common set of attitudes and commitments and improve teamwork.

Pre-testing was most common in technical training that required strong basic math and blueprint reading skills. In these training projects, most companies conducted at least a short, informal test to see whether remedial instruction was

necessary. The companies that did not do pre-tests for this type of training felt that unrecognized problems in language and basic skills prevented them from reaching their learning objectives with some trainees.

Employee Testing: Problems and Issues. Employee testing in the workplace raises some difficult issues for companies and for state programs. Two central issues are: (1) the validity of the tests in measuring job proficiency, and (2) the use of testing in making employment and job assignment decisions. Some businesses and trainees expressed concerns about testing in training projects. One major concern was that some types of tests, such as written tests, are not good predictors of whether a trainee can apply skills successfully on the job. Also, trainer or supervisor observations would not necessarily be reliable methods of testing the job skills of trainees. A related concern was about how companies would use test results.

Measuring Training Objectives: Practical Illustrations. Given the potential validity problems of employee testing and the mixed reactions of businesses and trainees, state programs should probably proceed cautiously in using training outcome measures in a performance assessment system. However, the measurement of training outcomes is still critical in insuring that companies implement training programs designed to achieve bottom-line performance results, i.e., the functional skills necessary to improve job and work-unit performance.

One alternative is to require that companies indicate through a simple checklist whether or not the trainee was proficient in each objective included in the training plan. This alternative can be illustrated by describing the monitoring system used by some companies and training contractors included in the case studies.

Glendale Community College used a competency-based curriculum in its office automation programs that specified the training objectives for each module of the curriculum. As described in the second volume of this report, Glendale also had a monitoring system that asked the trainer and trainee to complete a checklist on the training objectives in which the trainee had achieved proficiency after training. Thrifty Corporation used a similar system for checking progress and conducting individualized follow-up instruction. Other examples for Arcata Graphics and Unicadd are provided in the case study summaries.

This type of monitoring can provide a useful model for measuring the attainment of training objectives. It provides a simple yet reliable indicator of contract performance without having the business incur substantial additional costs.

Worker Earnings

Federal and state employment and training programs have traditionally used post-program wages and earnings as an indicator of success. The assumption is that wages and earnings are an unbiased indicator of the increased productivity of workers undergoing government-financed training (Bishop, 1987). As indicated previously (Creticos and Sheets, 1989), this assumption is difficult to apply in retraining programs where the trainee is employed before and after training. In

employee retraining, the relationship between higher skills and higher wages will be contingent on many factors including the type of compensation system in the company and the competitive pressures of the company in its own industry.

Compensation Systems. The 24 companies included in the case studies had substantially different compensation systems. The most common system was fixed wage and salary ranges for job classifications, modified by some type of merit increase system. In job classifications under collective bargaining agreements, wage ranges were relatively fixed. There was a formal system of internal bidding for higher wage jobs within the company. Some companies also had profit-sharing or gain-sharing systems that provided workers with additional compensation based on company performance. Two companies had some type of knowledge-based compensation system in which workers could receive higher base salaries if they had the skills necessary to perform multiple jobs.

Because of these differences, it is very likely that the direct effect of training interventions on wages will be contingent on how the compensation system rewards performance improvement in the short run. If jobs have relatively fixed wage ranges with only small amounts possible for merit increases, then the training effect will be relatively small. However, in knowledge-based compensation systems, there should be a more direct relationship; completion of training should be associated with a significant pay increase. Gain-sharing and profit-sharing plans will make the effects extremely uncertain because of all the factors that influence a company's profitability.

Other Determinants of Wages and Earnings. The expected relationship between performance and pay that is assumed in employment and training programs also is expected to hold in employee retraining programs, everything else being equal. However, in companies undergoing major organizational and technological changes as well as employee retraining, the entire organization and the industry in which it competes usually are undergoing a major transformation. Such companies often are under strong competitive pressures to substantially reduce costs, improve quality, and shorten delivery times under their current costs. Many times, retraining is a strategy to retain employees at current wage levels in the face of strong competition. In these cases, a training project is successful if it maintains current wage levels through performance improvement.

Because compensation systems in businesses vary widely, and increased skills, company performance, and earnings are only loosely related, state programs should be very cautious in how they interpret post-training wage and earnings information. Although state programs should monitor and report this information, it should not be a major performance outcome measure for judging the success or failure of the contract.

Measuring Earnings: Possible UI Applications. Because of their limitations, businesses do not use wages and earnings as a performance outcome measure to assess the effectiveness of their retraining investments. As a result, if state programs require companies to report this

information, it would represent an added cost to the company for which the benefit is unclear.

One way for a state program to track earnings information without imposing substantial costs on the company or on program staff is to use wage record data from the unemployment insurance (UI) system. Beginning in 1988, all states became wage-reporting. Thus, all states can use the quarterly wage records filed by each company to track the post-training wages of each trainee. Previous studies have concluded that the comprehensive coverage, low cost, and high reliability of UI wage reporting systems make them appropriate for a wide range of evaluation purposes in JTPA, vocational education, and welfare reduction programs (Stevens, 1989; Baj and Trott, 1990). The only added burden is that companies would have to submit the social security numbers of their trainees. All four states participating in the project already require the filing of social security numbers. California and Illinois already use UI wage records to confirm the employment status of trainees 90 days after training for performance-based payments.

As part of the feasibility study, we used the three pilot case studies--Harman, Rohr Industries, and Ingersoll Milling and Machining--to test the feasibility of using UI wage records for tracking pre- and post-training earnings. The Employment Training Panel provided quarterly earnings data for all trainees for Harman and Rohr Industries. Illinois provided similar information for Ingersoll Milling and Machining. This information was used in the case studies with no major problem.

Summary and Conclusion

The case studies of 24 training projects in the four state programs suggest that company and work-unit performance outcome indicators can be identified easily and measured in ways that are consistent with the methods that businesses use to measure their performance. Such measures would not impose an extra cost on businesses because they normally collect the same information for their own internal purposes.

These case studies present a more complex picture of the measurement of training objectives. The approach to and quality of instructional design varied tremendously by training project. However, it is clear that most companies could easily have restructured their training curricula in terms of clearly stated and measurable learning objectives. This requirement would entail additional effort from most companies. However, it is consistent with widely accepted standards of business training design, and it should result in more effective training projects. Because of validity and reliability problems in employee testing, especially employer ratings of job performance, we conclude that post-testing requirements should remain very simple and easy to administer. The major purpose of post-testing is making sure that companies maintain a clear commitment to reaching training objectives for the vast majority of trainees.

Although the use of wages and earnings as a major performance outcome indicator has considerable problems, they should still be tracked and reported by state programs. Data collection costs can be

minimized if wages and earnings do not become a central performance indicator and if UI earnings records are the major source of data.

CHAPTER 5

TARGETING TRAINING INVESTMENTS: Business Screening and Substitution Minimization

The fourth feasibility question is whether it is possible to develop appropriate business selection and screening guidelines to improve the targeting of training investments. This chapter presents findings on the feasibility of using the seven proposed screening guidelines. Based on these findings, this chapter then presents an application process that could be used by state programs in selecting businesses using these screening guidelines.

Business Screening: Competitive Strategy, Performance Objectives, and Need for Retraining

Based on our review of approved projects in California, Illinois, New York, and Missouri, we are confident that businesses are able to describe their competitive environments and strategies, their business goals and operational objectives, performance measures, and the importance of training objectives. Inasmuch as a substantial portion of this information is included, sometimes incidentally, in the narrative of a funding request, we do not believe that the transaction time or costs incurred by either the funding agency or by the business seeking assistance will be increased appreciably if such information is made formally a part of the grant request.

Evaluating the Application for Funding. In general, we conclude that asking companies to supply this type of information is both reasonable and feasible in terms of the transaction costs for the company in applying to a state program. The following issues remain.

- To determine whether it is appropriate to use this information as the basis for selecting companies to fund.
- To determine whether such information from the company is sufficient to form the basis of a funding decision.
- To determine the nature and availability of other information that is required for a funding decision.

State-financed, workplace-based retraining programs are based on two

principles: (1) giving assistance to businesses to help them become more competitive (thereby supporting the local or state economy), and (2) improving the long-term economic security of the worker (first, by helping the company prosper and second, by making it possible for the worker to gain marketable skills). In order for the state to make a reasonable judgment regarding the likelihood of success with either goal, it must be aware of a company's current condition and the direction that it intends to take. Although the training component may represent a small portion of the total cost of making improvements in a business requesting assistance, the reason for the training can be understood only in the context of the overall effort. In addition, as competition for government retraining assistance increases, the state will have to make increasingly finer distinctions among applicants. This, by itself, will add to the demand for information on the competitive environment and direction of the applicant. Therefore, it appears that the state has no choice but to require businesses that seek assistance to explain their circumstances and describe their plans.

Once it has received information about a business, the state is obligated to test the reasonableness of the company's assumptions and conclusions. In many instances, the business itself may provide the documentation that supports its goals and operational objectives. Often, this documentation is in the form of benchmarks. Either these benchmarks are generally accepted within the industry or they are standards established by a business acknowledged to be a leader in the characteristic that the applicant wants to emulate. For example, Lyphomed provided extensive documentation on its interpretation of the "good manufacturing practices" rule of the Food and Drug Administration as the industry standard. In this case, the company was able to show how it had addressed each concern cited by the FDA at the conclusion of its last inspection and that the news of FDA concerns had adverse consequences on the financial health of the company. In another example, Harman had introduced speaker cabinets that, because of their unique design, required manufacturing tolerances that exceeded industry standards for speakers in the same price categories. Harman sought to be the quality leader in cabinet design and manufacturing. Through its quality control records system, it documented adverse consumer reactions to poorly manufactured speakers and the changes in consumer opinions as improvements were made in mill operations. Another company, Manth-Brownell, provided a copy of an industry-sponsored research report on the precision metals industry that formed the basis for company owners to target specific niches in the precision metal turning business. A fourth company, Northwestern Steel and Wire, reported the industry-wide standard for maintenance costs for American mini-mills and set out a strategy to reduce its maintenance costs so that it could become more cost-competitive within its industry.

In some instances, a state agency will not be able to rely on the applicant to provide the benchmark information. This will be true in particular for small businesses that have few if any local competitors. Although many small businesses have a very clear idea about the problems that they must overcome to remain viable and grow, very few have the capacity to

document market conditions. In such cases, the state should be prepared to offer technical assistance, either through the agency or in cooperation with state business assistance programs, that will assist the business in gaining a comprehensive view of competitive standards and conditions. It is possible that the markets served by the enterprise are so specialized that no industry benchmarks exist. In such circumstances, all that the state can reasonably expect is that the business explain how its financial or market performance will improve with the changes it proposes.

In very large grants, those in excess of $100,000, we believe that it is justified for business and government to incur the added transaction cost for information on relevant benchmarks if the information is not provided initially. A variety of readily available sources provide information on the competitive strategy and business goals of a firm. In the case of firms with publicly traded stocks, annual reports and 10-K filings with the SEC are available to the public. Privately held firms often have brochures or other public information items that discuss the products and services they offer and the reasons for doing business with them. A more detailed understanding of the competitive strategies of either type of business may be obtained easily in interviews of senior management and often in interviews with the primary contact at the firm. However, many businesses may be sensitive about revealing such information in public documents for fear that it may give competitors an early opportunity to plan a response to a new strategic initiative. Consequently, considerable care must be taken to avoid revealing proprietary information either by publishing it or by allowing it to become the subject of a freedom of information action.

The confidentiality problem is being confronted by all state economic development programs. States should review their freedom-of-information statutes and make sure that company applications can remain confidential and protected from external inquiries.

Sources of information on industry benchmarks include industry associations, market experts, government studies and publications, inter-firm productivity surveys, news reports, and customers. For example, the National Tooling and Machining Association, the Precision Metal Association, and the American Electronics Association publish financial ratios and performance information for different types and sizes of manufacturing companies in their industries. Industry analysts publish annual reports on the performance of North American auto assembly plants. In light of the sensitive relationship that exists between supplier and buyer, information from customers should be obtained only in cooperation with the applicant.

Skill Mismatch and Skill Shortage. The next two screening criteria refer to the need for retraining: the mismatch between skills and job requirements and the demand for the new skills in the effective labor market (i.e., the labor market area defined by the normal mobility of workers within a given occupation and industry). In considering the question of skill mismatch, the most important factor to consider is whether companies can define any new and measurable training objectives that are linked to organizational and technological changes and the resulting redesign of jobs.

In Chapter 2, we proposed that businesses be asked to define clear and measurable training objectives that list the new behavioral skills needed to meet the new job requirements. The next factor is the degree of mismatch created relative to the size of the state grant requested. This determination largely should be the judgment of program staff and should not require additional outside consultation or research. In most of the 24 cases, businesses were able to define a wide range of new skill requirements and were able to show how they created a significant mismatch. This requirement should not pose a major problem for businesses applying to state programs.

The second issue of marketable skills is more difficult to address. In most cases, businesses could comment on the demand for the new skills in their immediate labor market area. They were able to explain the difficulty they had in finding employees with these skills and the common problems of businesses in their industry to recruit similar people. In cases where a training provider served a consortium of small businesses, skill shortages were quite evident and easy to address. The Los Angeles chapter of the National Tooling and Machining Association created its CNC training program to fill skill shortages of machinists and machine operators.

Although most companies can address the skill shortage issue, the state program should do additional work to address it, especially when the grant is justified on that basis. In the screening guidelines, we propose that a business be able to justify the need for retraining assistance on the basis of improvements in business performance and training in marketable skills. The latter insures that, if trainees lose their jobs, they will most likely be able to find employment in their immediate labor market area. If potential improvements in business performance are difficult to assess in the application process, then state program staff should put greater emphasis on marketable skills in making their final decision on the training project.

State program staff should establish the following minimal criteria for determining marketability. First, the occupation or occupational cluster for the skill training (e.g., machinist) should not be declining significantly in the state. Second, industry representatives outside the company should confirm that the new skills are in demand by similar companies in the labor market area. The first condition could be established through state or local occupational projections developed by the Occupational Information Coordinating Committee of the state. Because skill demand and occupational demand are not equivalent, great caution should be used in drawing any conclusion regarding marketability unless the occupational cluster is undergoing drastic employment decline.

In meeting the second condition, state program staff could contact a representative from an industry association and get the names of at least three personnel directors who could comment on the skill requirements for that occupation in that industry group. The personnel directors could confirm that the training is for skills that are in demand in the labor market area. Because state programs do recurring types of training (e.g. SPC, MRP, CNC), the survey of personnel directors would not have to be

repeated for every contract. In addition, state staff would not have to ask for detailed information from personnel directors. They would require only enough information to establish that there is at least some market demand.

Substitution Guidelines: Need for State Assistance

Although the state may be satisfied that the training is tied to legitimate and sensible business goals and measurable operation objectives, the question remains whether state assistance is required to bring about an appropriate training program in a timely fashion. We have concluded from our case studies that the issue of substitution can not be understood properly as a question of whether the company has sufficient money to pay for the training without outside assistance. Although that should be one consideration, a comprehensive set of substitution guidelines should recognize four major barriers that could prevent a company from retraining its workers at the level and in the time needed to accomplish its performance goals. These barriers are: (1) financial need, (2) the absence of prior training programs, (3) marketable skill training, and (4) layoff decisions and possible corporate disinvestment.

Financial Need. The Prairie State 2000 Authority addresses the issue of financial need directly by requiring the applicant to show that it lacks the financial resources to do the training. Businesses considered eligible for state assistance are those incurring operating losses or reinvesting retained earnings without paying extraordinary officer salaries or dividends. Also, money-losing facilities of otherwise profitable parent corporations are considered eligible for Prairie State 2000 assistance. Finally, businesses that already have undertaken the retraining project prior to funding approval are automatically considered ineligible for assistance. The Board of the Authority has concluded that by commencing training, the business has demonstrated a capacity to pay for it.

Prior Training Experience. The approach of the Prairie State 2000 Authority is based on the assumption that the chief barrier to training is financial. Although company officials in all 24 cases reported that the state funds were responsible for the decision to undertake a comprehensive training program in a concentrated time period, they also reported that assistance from the state helped to overcome other barriers related to the lack of previous experience with and commitment to employee training. One such barrier often cited was that senior management was not sensitized to human resources problems created by technological or process changes. It appeared that state assistance made it possible to focus the attention of senior management on the need to train. For example, Rohr Industries had failed in a previous attempt to implement a rudimentary version of the manufacturing control system that it subsequently adopted. One reason for its initial failure was that management thought it was sufficient to train only key personnel. The prospect of state assistance was reported to help in the decision to train all personnel on the subsequent system.

A related barrier was the reluctance of key managers to disrupt company operations for training. However, it appears that the

prospect of state involvement and its continued presence following authorization of the grant gave Rohr the impetus it required to take people out of productive work and send them to class. Although production managers may support the idea of training, many were reported to be skeptical about its net benefits in light of the problems that it would create in meeting daily production objectives. Assistance from the state appeared to give management an important incentive to work out these problems between production managers and those responsible for training.

Another barrier appears to be fear of the unknown. Companies that never had undertaken a formal training program (except for new employee orientation or safety training) reported that the prospect of state assistance helped to convince management to try it on a large scale. As a consequence of their experiences, some companies have established on-going training programs. Solar Turbines did not offer formal skill training to its machinists until it received a grant from the Employment Training Panel. It since has opened a training department that serves its own workers and provides training services to other southern California businesses.

Training in Marketable Skills. One policy rationale for state assistance is that it compensates companies for the externalities of employee retraining. The assumption is that businesses will not retrain employees to the full extent necessary unless government compensates them for the risk of investing in workers whom they may lose to other companies before they receive the full return on their investment. The risk is that competitors will be able to bid away skilled workers without bearing the direct cost of training.

Although the research literature gives great importance to the problem of training externalities, this barrier was only one of many reported by companies. It was most often reported by small companies and companies retraining workers in occupational areas of strong business demand.

As described above, it is very difficut for a state agency to determine market demand for skills on the basis of available secondary labor market information. However, this is still an important screening guideline for minimizing the effects of substitution.

Layoff Decisions and Corporate Disinvestment. A final consideration was whether the business establishment applying for state assistance was attempting to improve internal operations in the context of some type of corporate investment decision in the facility. A related issue is whether the business establishment was actively considering a layoff decision.

In some cases this consideration was important in determining the need for state assistance. For example, the Employment Training Panel provided funding assistance to Pirelli-Armstrong Tire Company after being notified that the facility might close. State retraining was used to help the facility remain open. This example illustrates how such screening criteria may be useful in approving training requests.

In our 24 cases, we found that available financial resources were one of several

factors that contributed to the reluctance of the company to initiate retraining. The operational difficulties in scheduling training, poor experiences with previous ill-conceived training efforts, and fear that the training would not succeed were a few examples of the barriers that prevented employers from initiating their own training programs. In these cases, the state grant validated the legitimacy of training and overcame both financial and management uncertainties.

Implications for State Policies on Matching Contributions

The four states participating in our study each recognize the contribution towards the training, either direct or in-kind, that is made by or in behalf of the company. In Illinois, the amount of the state contribution is tied to the percentage of the direct training costs. The California Employment Training Panel is required under its new legislation to establish a policy on in-kind contributions with respect to its funding decisions. New York and Missouri variously consider the relative shares that each party must bear in the training program.

Generally, states require in-kind contributions for any of three reasons. One reason is that the state has limited financial resources and uses formulas for in-kind contributions as the basis for extending the reach of its programs. Another reason is that the state uses the in-kind contribution as evidence of a company's commitment to the retraining effort. In using this reason, the state presumably is able to show that the company views the retraining as sufficiently important to require the expenditure of its own resources. The state also hopes that if the company has a stake in the training, it will exercise prudence in the costs that it incurs in the training itself. Finally, a state may use in-kind requirements as a means of controlling for substitution. This principally is based on the assumption that a company will not incur substantial costs in order to earn a small increment of revenues from the state coming in the form of training assistance. However, this use of in-kind policies appears to be done ad hoc.

In-kind policies may be adjusted and formalized to address substitution issues. We propose that the funding burden carried by the state be inversely related to the likelihood that the company will do the training anyway without assistance. Based on our interviews, upper management and production managers regarded classroom training as least likely to be done without assistance. From a cost standpoint, classroom training requires that the company incur the cost of the trainer as well as the lost production time of workers who receive their regular pay but are away from the normal routines of work. In addition, companies appeared to have the least experience with classroom training, probably because of its cost. Finally, classroom training tends to focus on more basic and occupational skills. Such skills tend to be more transferable because of the many other skills that they support. All these factors appear to impose significant barriers to classroom training.

At the other end of the training continuum, structured, on-site training was regarded with the least resistance by upper management and production managers. Typically, such training can

occur during the course of normal work routines when some production output may result. In addition, companies typically had considerable experience with the form of on-the-job training in which more experienced workers show new workers how to operate specific machinery or perform specific procedures . Finally, structured, on-site training tends to focus on job-specific skills. These skills often are unique to a particular company and are less transferable to other firms, even those in the same industry. Consequently, businesses were much more likely to undertake structured, on-site training without much urging from the state.

Laboratory training appears to be somewhere in between classroom training and structured, on-site training in terms of the propensity of a company to undertake such training on its own. Although it carries the same costs as classroom training because it takes workers away from the normal routines of work, laboratory training tends to be less transferable than classroom training and seems to be more common than classroom training.

In light of these observable differences, we propose that states require in-kind contribution in accordance with the principles diagrammed in Figure 7. Essentially, the share of the state contribution should be large relative to the company contribution when the costs are related to classroom training. This share should be reduced for laboratory training and should virtually disappear for structured, on-site training. The relative shares also may be adjusted to reflect other issues as well. For instance, the line demarcating state and company shares may be moved to the left and made more vertical, thereby increasing the state share, if the state determines that the company lacks the financial resources to pay for the training. On the other hand, the line may be moved to the right and made more horizontal if the company previously has paid for training projects similar to the one for which it is seeking state assistance and if it is judged to have significant resources for training. This may occur in cases where the company is seeking additional funds for the continuation or expansion of an existing classroom training program. In addition, state policy, such as the Illinois statutory requirement that the Prairie State 2000 Authority cover no more than 50 percent of the direct training costs, will determine where the line is placed and even its shape. (In the case of Illinois, the line would look more like a semi-circle with the state covering half of the costs of classroom and laboratory training and nothing else.) Regardless of the specific policies that will favor one type of training investment over another, state in-kind contribution policies may be structured formally to help minimize substitution concerns.

Proposed Application Process Using Screening Guidelines

Based on these findings from the feasibility study, we conclude that screening guidelines can be applied effectively in a simple application process. The major components of the application are shown in Figure 8 and are discussed below.

1. **Overview of the Competitive Problems Faced by the Business.** In the case of publicly held companies, competitive problems often are stated

Figure 7

Proposed Model for State In-Kind or Matching Contribution Policies

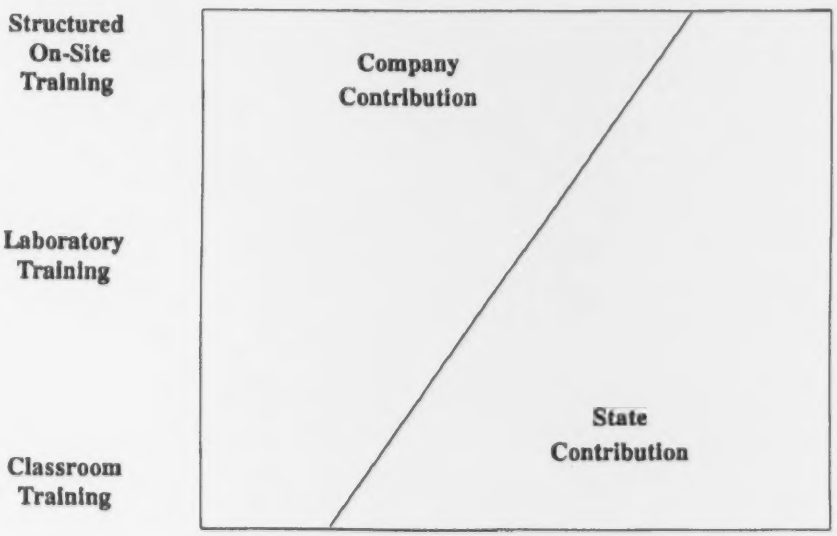
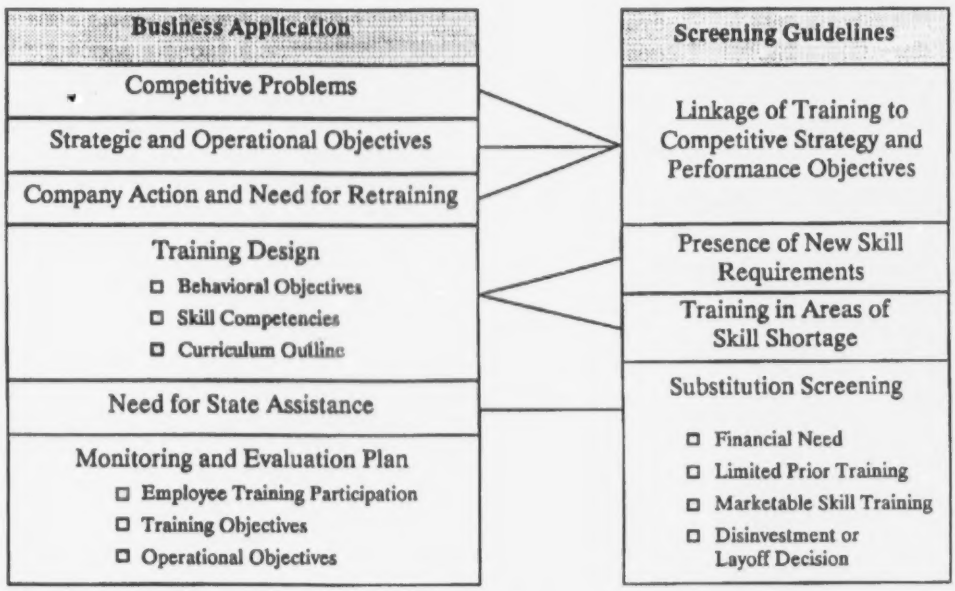


Figure 8

Business Application and Screening Guidelines



generally in annual reports and 10-K filings with the Securities and Exchange Commission (SEC). In closely held companies and at the plant or functional unit level of publicly held companies, details of these competitive problems may be proprietary.

Regardless of the source of information, it is sufficient to state the problem generally in order to give a context for the strategic and operational objectives of the company. This will not reveal any proprietary information and will not add to the competitive disadvantage of the business making application for state assistance.

2. **Strategic and Operational Objectives for Resolving the Problems of Competitive Disadvantage.** The financial and market performance of a business, as defined by shareholder value, profitability, return on investment, and market share, is affected by the ability of the firm to pick the correct competitive strategy and to implement it effectively. The competitive strategy and business objectives of a firm revolve around the factors that describe the competitive environment for that firm. Typically, these factors are one of three types: product differentiation, product quality, and product cost. The operational objectives define the functional units that affect the strategic outcomes of the firm and set the level of performance for these units. Functional units include customer sales and service, product design and manufacturing engineering, management information systems, production processes, facility management and maintenance, material management and control, and administrative support. The success of the company in meeting these objectives may be determined on the basis of changes in associated performance indicators. For instance, quality control may be considered to be a problem in production processes. This problem may be manifested by an unacceptable cost for waste, which affects the overall cost of the product. The operational objective would be to improve the quality of the production process as measured by a reduction in the rate of waste. We believe that companies recognize the need to take action when performance falls below acceptable levels, and they should be able to articulate their performance targets in making their request for assistance from the state. Inasmuch as the nominal performance values often are closely held, states should expect to receive performance targets in terms of percentage changes.

3. **Company Action Plan and Training Objectives.** In its efforts to achieve operational objectives, a business will undertake a series of changes, including the acquisition of new equipment, an adjustment in work processes and procedures, and changes in product design and quality standards. In a properly executed strategy to achieve operational objectives, these actions, including the training, will come together in an organized and logical fashion. An action plan is a written description of the actions to be taken, the order for taking these actions and the associated timetable. The action plan should include the training plan and the timetable for other related activities (e.g., installing new machinery, establishing manufacturing cells) that will be combined with training to produce the expected change in performance. It is especially critical for workers to receive their training at a time that will enable them to put their new skills to use. Consequently, it is appropriate for the state to know the action plan so that it can

monitor the progress of the company and make adjustments in the training schedule in order to keep it on track with the overall strategy for improving operation. The action plan also will define the skills that the workers must have and the training objectives they must achieve to support the implementation of the changes.

4. Training Design. The retraining project that is proposed for state assistance should articulate the behavioral or training objectives and the related skill competencies that are needed in order for the workers to contribute to the company's performance targets. The training curriculum then brings each worker forward to an acceptable level of skill from one that is either assumed or determined by pre-testing.

5. Need for State Assistance. In our first report, we suggested that states should avoid making investments in firms that appeared to be able to afford the training without causing any appreciable delay in timing or without limiting its scope. We believe now that this represents too strict a standard in distinguishing needy companies from those that view government grant assistance as another source of revenue. As a consequence of our feasibility study, we recommend that, as a condition for the business to receive funds, state officials must be satisfied that the business faces barriers to initiating training and that state participation is necessary for the appropriate training to occur in a timely fashion. A company that proves financial need is, in effect, giving prima facie evidence that state assistance is required. However, three other barriers should be considered: (1) prior training experience, (2) training in marketable skills, and (3) pending layoff or possible corporate disinvestment.

6. Project Monitoring and Evaluation Plan. The application should set forth the basis for verifying the participation of company personnel in the training project and for monitoring the progress of training, the measures for assessing the attainment of training objectives, and the performance outcome measures for assessing the level of the company's training-related success in achieving its strategic and operational objectives. In setting performance outcome measures, it is important to recognize that changes in performance may follow several months after the completion of training until all associated organizational and technological changes have been implemented fully.

Summary and Conclusions: Illustration of Program Application

The feasibility of requiring program applications to include the various kinds of information discussed in this chapter can best be demonstrated by describing what a possible company application could look like for the four state programs in the study.

As shown in Figure 9, the description of competitive strategy and business goals as well as the statement of operational performance objectives, business action, and the role of retraining objectives can be contained easily within two pages of an application.

Figure 9
Example Application for XYZ Corporation

Overview of Company

XYZ Corporation is a medium-sized, family-owned and operated business making widgets. It sells these widgets to automotive assembly facilities in three midwestern states, where it competes with four other widget manufacturers.

Competitive Problems

The automotive industry used to require widget vendors to compete on the basis of price. Recently, vendors have had to meet stringent quality and delivery requirements while facing demands to lower price by 10 percent. XYZ Corporation faces loss of its contracts if it cannot meet customer demands within one year.

Strategic/Operational Objectives, Performance Measures, Action Plan

XYZ Corporation is determined to improve quality, reduce throughput time, and reduce price to meet customer demands within one year. Specifically, it expects to improve quality as indicated by a 15 percent reduction in scrap costs by implementing a quality assurance program. It also expects to reduce throughput time as indicated by a 10 percent reduction in the time it takes to produce a widget from receipt of raw material to shipment of final product. This will be achieved by the implementation of a quality assurance program that will reduce re-work costs by 35 percent. It is estimated that a 35 percent reduction in re-work will reduce average throughput time by 10 percent. Finally, it expects that price will be reduced by 10 percent as a consequence of the savings achieved in the quality assurance program, which consists of the implementation of statistical process control. The company will:

- ☒ Implement SPC within the next nine months through a consulting contract with the Widget Manufacturing Association.
- ☐ Develop raw material specifications within next six months and implement raw material inspection program using statistical sampling techniques. Identify material defects and develop strategies with suppliers to improve their product.
- ☐ Develop and implement a material utilization program within the next six months.
- ☐ Complete technology and industrial engineering assessments of manufacturing facility within next 3 months.

Figure 9 continues

Figure 9 (continued)
Example Application for XYZ Corporation

Need for Retraining

Statistical process control is entirely new to XYZ Corporation. Consequently, the entire production workforce and quality assurance department requires training in the subject.

Retraining Design

(Curriculum and budget)

Need for State Assistance

Although XYZ Corporation periodically has provided training to its employees on proper safety procedures in conformance with OSHA, it has never undertaken any broad-based technical training project. Management recognizes that the most effective means to implement statistical process control in the plant is to train all production personnel. However, if the company were to undertake the project on its own, it would incur the direct costs of the training program and the losses that are the result of lost production due to the number of workers that will be in classroom training and out of the normal routines of work. In light of the risk that this training project may not be sufficient to achieve the expected results, the company is unwilling to proceed on its own. The assistance provided by the state spreads the risk and brings in a partner that has had experience in financing such training projects.

Project Monitoring and Evaluation Plan

The XYZ Corporation expects that training will begin within two months after receiving approval of the grant. It also expects that within five months following the commencement of training, 60 percent of the workforce involved in training will have completed the SPC project exercise. An additional 10 percent of the workforce will complete the training each month thereafter. One month following the completion of training, the XYZ Corporation expects to have achieved over the previous year a 10 percent reduction in scrap costs per unit of final product, a 10 percent reduction in throughput time, and a 35 percent reduction in the costs of re-work per unit of final product.

CHAPTER 6

TRAINING IMPLEMENTATION AND STATE MONITORING: What Makes A Training Project Work?

The 24 case studies provided important insights into what makes state-financed training projects work. In every case study, we highlight the different strategies (e.g., joint management-labor committees, in-house versus contracted training) and instructional approaches (e.g., computer-based instruction) that companies use in retraining workers (see Volume II). In virtually all cases, these strategies appeared to work very well. We also reviewed the monitoring activities of the state program from both the program and business perspectives, especially in Illinois and California. In this chapter, we summarize findings that could be applied to all 24 case studies and the four state programs.

Key Factors in Training Success

The training design model presented in Chapter 3 provides useful guidelines for state programs to follow in establishing business screening guidelines and constructing a basis for project monitoring and performance outcome assessment. In general, we found this model to be applicable to most cases and useful in highlighting the important features of a successful training project.

Upper Management Commitment and Business Objectives. The most important factor in determining the success of a training project is that it have strong upper management support and be organized and justified internally to the company around a specific and measurable business objective. As recognized by Brinkerhoff (1989), training departments in large companies sometimes can establish training projects that do not meet the immediate performance needs of line management but rather serve internal departmental interests. Small companies many times attempt to utilize standard training curricula from outside vendors without taking the time to customize the training package to meet their unique performance objectives. In both cases, training projects were successful to the extent that people learned what they were taught. However, they sometimes fell short of producing expected improvements in business performance. The most successful training projects were those originated by upper management, especially line management, in the face of a business problem that required retraining. This linkage to a business

objective established the basis for an effective training design and for the cooperation of line managers who had to release employees for training.

Employee Understanding of Business and Training Objectives. The training model described in Chapter 3 emphasizes the importance of providing the trainee with a comprehensive knowledge of the reasons for training and specific training objectives. This factor was critical in the 24 training projects. The most successful training programs were those that devoted considerable time to involving employees in a comprehensive discussion of the major competitive problems faced by the company, the specific strategies proposed by the company, and the specific operational objectives required to remain competitive. Successful programs also ensured that employees understood why these operational objectives required changes in internal operations and in the basic skills required for their jobs. In some situations, it was important that labor and management develop training programs through joint committees. In other situations, it was critical that management provide extensive information on the condition of the company and ask for employee input on the design of the training program. In still other situations, a brief review of business reasons for retraining was sufficient to make the training program successful. The common element in all of these training projects was that employees fully understood the business and training objectives of the project and how it could potentially benefit them.

Training Objectives and Competency-Based Instruction. The most successful training projects were those that defined behavioral objectives for the training project clearly, based on what management and workers felt were the new skills required in the company. As a result, such projects were able to explain to the workers the company's reasons for training and what was going to be expected of them in applying their training to their jobs. In some cases, projects used curricula that covered the appropriate subjects but failed to establish in the beginning how the trainees were to apply the knowledge and skills on their jobs. This was usually worked out while training was underway or immediately after the classroom or laboratory training was complete and structured on-site instruction had begun. In addition, the most successful projects used competency-based curricula that defined learning outcomes clearly for the intermediate knowledge and skills that were the foundation for the behavioral objectives.

Work-Based Learning. The training design model emphasizes the importance of using the methods, media, and conditions that are most appropriate for eliciting the appropriate functional skills in on-the-job applications. The most successful projects were those that linked classroom instruction with hands-on applications in laboratory sessions or structured on-the-job training. This work-based learning seemed effective particularly with employees in nonmanagerial and nonprofessional occupations and with those who had limited educational backgrounds and limited experience with company training.

Basic Skills Assessment. The training design model emphasizes that individual differences be assessed before employees start the training program. As discussed

earlier, this practice was not appropriate or necessary in all projects. However, in those projects involving technical skill training, the most successful projects used simple pre-tests for identifying basic skills deficiencies. In other cases, training projects ran into problems because the workers were found to lack important basic skills required for advanced technical training.

Government Monitoring: The Perspective of State Programs and Business

State program administrators, agency governing boards, state legislatures, governors, and businesses hold the general principle that state-financed, workplace-based retraining programs should be highly flexible and operationally streamlined. The proposed evaluation system is designed to match the state's interests with good business practices. Such a design minimizes the possibility that businesses will incur additional overhead costs that bring little value to their operation, but it provides the state with the essential facts about its training investment. Nevertheless, it is inevitable that conflicts will arise between the various interest groups, particularly between the state program staff and the business, over monitoring the progress of the training project.

Although state agencies need to avoid becoming overly intrusive, it appears that the monitoring process frequently contributes to the success of the project in two ways.

1. **Commitment to Training.** The pressures of daily production quotas or customer demands, the regular assortment of business emergencies, and the skepticism of workers and managers towards the training project are among the many factors that undermine the commitment of the business to the retraining project. It is understandably difficult for a manager to take a long-term view on the value of training when immediate problems must be solved. As a consequence, it is common for businesses to excuse workers from training sessions in order to keep them working or to let the timetable for a training program slip. However, many business project managers reported that, because the state took an active role in monitoring their projects, they were able to enforce the company's initial commitment to training. Although many managers said that the state's reporting requirements were difficult to fulfill, they provided a rational basis for managers to demand that supervisors meet the conditions of the grant. For instance, California often requires that all employees verify that they received training by initialing an attendance sheet for each classroom session. As a result, one company was scrupulous about sending its workers to training sessions at their appointed times. In retrospect, the project manager and other supervisors said that the uniform participation of all workers in the training project was an essential ingredient to its ultimate success.

2. **Modifications to the Training Design.** In our review of 24 cases and in discussions with program staff from the four states participating in the study, we found that training designs frequently were adjusted to reflect changing conditions within the

firm. In some cases, these changes were the result of competitive pressures causing alterations in the operational objectives and targeted performance levels of the company. In other cases, the changes were a consequence of the training project itself. Many businesses reported that in implementing the training project, they discovered other problems that first needed to be resolved before the desired business objectives could be reached. For instance, it was not unusual for companies implementing statistical process control to discover that their workers lacked fundamental math skills and that the training program had to be adjusted to include shop math courses. Some businesses discovered that by involving workers in the design of the training program, they were able to understand other hidden problems. One company discovered that its machinists worked from product engineering designs that were difficult to produce. As a result, it began to train some machinists as design engineers to work later in the design department. Regular monitoring of the progress of a training grant gives the state early warning about impending changes in the grant.

Although the proposed evaluation system stresses the common interests shared by government and business, each party regards the other with a good deal of distrust. Clearly, government staff must be diligent in preventing the improper use of public monies, and business cannot accept unlimited government intrusion in its affairs. Nevertheless, significant benefits to both government and business come as a consequence of their forced interaction as training occurs. Regular and systematic monitoring of progress on training provides for such interaction.

Essentially, progress monitoring is the process of verifying that the company has achieved certain objectives at specific milestones. It begins with the application when the company is asked to articulate its action plan. At this point the company must describe the elements of its overall strategy for change and the timing of each element. The application also describes the curriculum for the training program and the specific training objectives for each type of worker. The combination of the action plan, the curriculum, and the statement of training objectives provides the basis for future progress monitoring.

We propose that at the beginning of the training project, the company and the state agency establish a schedule that lists key milestones and the associated dates. These milestones should establish the number of people achieving specific training objectives. They also should establish other key events that are necessary for the successful achievement of the company's overall operational objectives, such as the acquisition and installation of key production equipment. The process of monitoring then becomes a matter of the state verifying that these milestones were achieved at the specified time. In the event that the project gets off schedule, the state and the company could use such milestone checks to make adjustments in future milestones, the funding stream, and even the funding amount.

Some states, especially California, pay very close attention to the amount of time that workers are said to be in training. They require the trainer and the trainee to jointly initial time cards each time the worker is in a classroom, laboratory, or structured on-site training session. We recognize that this type of monitoring may be audited,

and it has proven to be a useful tool in verifying that the state is receiving the services it paid for. However, by checking only on the "seat time" the worker spends in training, the agency misses the opportunity to verify that the worker has learned the skills defined in the training objectives.

We believe that the use of milestones, including an assessment of the skills learned in training by certain target dates, is an effective means of determining whether the final training objectives will be attained. Such an approach makes follow-up evaluation easier because the essential issue as to whether the learning objectives have been achieved is settled as the training project is implemented. In the event that the business is likely to fall critically short of its performance targets, the state may provide other resources to assist it or begin to prepare for the possibility that the workers receiving the training will need to look for other work.

Monitoring Performance Outcomes: Data Collection, Reporting, and Performance-Based Payments

The final element of the selection and evaluation system is the follow-up evaluation of the training investment. States such as Illinois and California require that retrained workers remain employed by the company for no fewer than 90 days before the company is finally reimbursed for the costs of retraining. One purpose for this requirement is to discourage companies from using state assistance to train many workers in order to select and retain the better ones. It also appears to indicate the company's commitment to improving its human resources. Consequently, we recommend that Illinois and California retain this requirement and that it be incorporated in the grants to companies in other states.

Although states may be reluctant to add other conditions to the final payments on retraining grants, we recommend that they consider requiring each company to verify that the workers receiving retraining achieved the training objectives. The form of the verification may vary by type and size of business and by type of training. At a minimum, it should represent the observations of the trainer or supervisor that each worker can perform an acceptable number of key functional tasks identified in the training plan.

In as much as training is but one factor in determining whether performance targets are attained, it is not as yet practical to tie final grant payments with company or work-unit performance. However, we suggest that each company's performance be monitored, depending on available state resources, for the purpose of providing program administrators with important feedback on the apparent efficiency of the retraining program and on the factors that may affect the ability of the company to achieve its operational and strategic objectives. This information may be used to improve the quality of the screening process and may lead to the new performance targets that may reasonably be used in routine project evaluations. It is important to recognize that changes in performance may occur up to one year after the completion of training until all associated technological and process

changes have been implemented fully by the company.

If states wish to tie performance payments to some type of indicator of performance improvement, we suggest that states focus on training objectives and the implementation of the action plan. States could make final performance-based payments if companies achieved their training objectives and completed the overall action plan in their proposal, including such things as the installation of equipment and quality control systems. This would provide states with the assurance that the company has done everything it said it would do in the contract with the state.

CHAPTER 7

CONCLUSIONS AND RECOMMENDATIONS

The first objective of this project was to clarify the policy rationale and intervention model for state-financed, workplace-based retraining programs in terms of their twin objectives of job retention and unemployment prevention. The second objective was to develop an evaluation system for these programs that contained:

- Business screening guidelines for targeting training investment and minimizing substitution effects.
- A performance outcome system that measured the program outcomes necessary to achieve these two program objectives.

In phase one, the project developed a policy rationale and intervention model for retraining programs based on a review of two programs--California's Employment Training Panel, and Illinois' Prairie State 2000 Authority. Ideally, state-financed, workplace-based retraining programs are designed to reduce unemployment and retain jobs by improving business performance and the competitive standing of the business within its industry and by providing marketable skills to retrained workers.

Based on this intervention model, a successful training project is expected to result in the following performance outcomes:

Training (Behavioral) Objectives. Retrained workers are certified as having attained behavioral skill objectives that are designed to improve work-unit or company performance and enhance the employment opportunities of workers outside the company.

Work-Unit Performance. Worker retraining is associated with improved performance of the work units that participated in the training project.

Company Performance. Worker retraining and associated improvements in work-unit performance are related to improvements in company performance.

Trainee Earnings. Worker retraining results in stable or improved employment and earnings for retrained workers.

Based on this intervention model, the first phase of the project also developed business screening guidelines that would maximize the effects of training projects on program objectives and minimize substitution problems. Seven screening guidelines were developed from these

assumptions. Three guidelines addressed company strategies and performance objectives and skill requirements. The remaining four guidelines addressed substitution screening. These business screening guidelines and the four performance outcome objectives constituted the evaluation model that was assessed in the second phase of the project.

The second phase of the study addressed the feasibility of implementing the evaluation model in four state-financed workplace-based retraining programs. These programs were: (1) California's Employment Training Panel, (2) Illinois' Prairie State 2000 Authority, (3) Missouri's Customized Training Program, and New York's Economic Development Skills Training Program. The feasibility study was based on 24 case studies of training projects funded by the four state programs. The study also involved related research activities on business training and evaluation practices and the availability of necessary industry and labor market information. This second phase addressed four major feasibility questions. The findings on each feasibility question are summarized below.

Business Training Design and Evaluation. The proposed evaluation system is consistent with widely recognized models for the design and evaluation of training projects that are intended to improve business performance (see Figure 4, Chapter 4). The evaluation system is consistent with what many training and development professionals recommend as the most appropriate way for businesses to plan and evaluate their own training investments. The only major difference between the evaluation model and recommended business practice is the model's emphasis on trainee earnings.

Definition and Measurement of Performance Outcomes. The case studies of 24 training projects in the four state programs suggest that company or work-unit performance outcome indicators can be easily identified and measured in valid and reliable ways that are consistent with how businesses measure their own performance. As a result, such indicators would not impose extra costs on businesses because businesses normally collect the same information for their own internal purposes. We conclude that company and work-unit performance are best measured in terms of operational objectives and performance targets that logically linked to business strategies and performance goals (see Figures 5 and 6, Chapter 4). The case studies identified seven major types of operational objectives and performance targets that could be linked to competitive strategies and business goals as well as financial and market performance.

The definition and measurement of training objectives varied widely in the 24 case studies. However, we conclude that all 24 companies could have easily restructured their training curricula in terms of clearly stated and measurable learning or behavioral objectives. This restructuring would require additional effort from most companies. However, it is consistent with widely accepted standards of business training design and should result in more effective training projects. Because of validity and reliability problems in employee testing, we conclude that post-testing requirements should remain simple and easy to measure and

should address behavioral skills directly related to a core set of learning objectives.

The use of trainee earnings as a major performance outcome indicator has significant problems because of the wide variation in company compensation systems. However, the employment and earnings of trainees is still useful to track and report. Data collection costs for businesses as well as state programs can be minimized by using Unemployment Insurance (UI) wage records.

Business Screening Guidelines. The seven screening guidelines can effectively address the most important targeting and substitution problems faced by state programs. Based on the 24 case studies, we found that companies can clearly state competitive strategy (e.g., cost, quality, differentiation), performance objectives, and the need for retraining. In most cases, they can cite industry benchmarks that they must meet to remain competitive. Industry information on competitive benchmarks is available to state programs, and they can use it to work with companies in defining meaningful performance objectives. With the exception of some small companies, most companies can define training objectives and retraining requirements. State programs can establish simple and inexpensive procedures to ascertain the marketability of the skills acquired through training projects. Although the substitution guidelines are more difficult to implement, they will be effective in reducing some of the substitution problems faced by state programs.

The seven screening guidelines can be effectively incorporated into a simple application process that would not require substantial extra work for either businesses or state program staff. The application process and the screening guidelines are summarized in Figure 2 (Chapter 2).

Implementation of the Evaluation System. The proposed evaluation system can be administered effectively without imposing substantial additional costs on either the business or the program. In order to implement the system, additional staff training will be required in order to standardize how businesses report performance objectives. Most state staff are sufficiently trained in identifying clear training objectives.

Future business participation is difficult to assess. However, no business reported any concerns about specifying performance or training objectives in future proposals. We recommend a simplified application process where each screening and performance outcome issue can be addressed effectively without a significant increase in the requirements of the application procedures currently used by the four state programs participating in the project.

This feasibility study resulted in six major conclusions on the effects of state-financed training projects in the workplace.

1. Based on interviews with management, trainers, and trainees, we conclude that training grants generally will expand the scope of the training project, shorten the time it takes, or enlarge the number of workers involved in it. In each of the 24 training projects examined in this study, the company reported that state assistance was key to the achievement of the final training product. In some instances, the public training subsidy was

the apparent reason that the training was actually undertaken. In most other instances, the businesses reported that the state money made it possible for them to reach all of the workers who required retraining in the timeframe necessary to have the desired effects on company performance. Also, they reported that state funds enabled them to broaden the scope of training to gain the maximum value from the technological and operational improvements being made in the company. This was accomplished by more basic and general vocational training.

2. Training projects were most effective when they were tied clearly to specific business goals and performance objectives and when the training plan defined clear training or behavioral objectives. Each of the 24 training projects that were part of the study produced improvements in business and worker performance that were associated with the training. However, the businesses that established clear company and training objectives at the outset had highly focused training programs with very satisfactory results. Businesses that were initially less clear about their purposes had less satisfactory results. Often, the training projects appeared to go through periods of uncertainty and reevaluation and were restructured after objectives finally were articulated clearly.

3. State grants have an important effect in overcoming management uncertainty over the importance of retraining workers for the introduction of new technologies and operational processes. The feasibility study identified a wide variety of barriers that prevent companies from starting retraining projects without outside intervention. These include poor labor-management relations, bad experiences with prior training efforts, concerns that newly retrained workers will leave before the company is able to achieve a reasonable return on the training investment, and general feelings that worker retraining is a luxury expense. It was striking that some grants were able to leverage significant investments in training by financially troubled businesses, particularly in light of the very limited uses that may be made of training grants. In every state, training project managers in the businesses consistently stated that government assistance was instrumental in getting upper management to focus on the importance of training in bringing about the desired changes in company performance.

4. Substitution risks are reduced substantially when state programs concentrate their grants on the direct instructi nal costs of laboratory and classroom training. Substitution risks are greatest when state programs pay companies for wages and salaries of trainees while they are in training. This is especially true for structured, on-site training wherein the trainees are engaged in productive activities that may be indistinguishable from their normal work routines after the introduction of new technologies or work processes. Consequently, it is unclear whether the state is subsidizing productive work or training. This situation differs sharply from formal classroom or laboratory training. Such instruction is always provided away from normal work, and it is usually the type of training in which companies have little prior experience.

5. Company executives at the 24 projects that we studied, especially those operating small businesses, initially did not know

how to use training as a strategic change agent to improve business performance. This problem was made more difficult because they had poor access to experts in training design and implementation. Also, the state agencies operating the training programs did not systematically develop and disseminate descriptions of how companies may utilize training to improve their operations. As a consequence, project managers relied on outside contractors to help them develop a change strategy, or they simply muddled through until they came up with a solution that seemed satisfactory. On a few occasions, the staff at the state agency provided the necessary technical assistance. In every state, the staff indicated that they wanted to provide more help, but could not because of the workloads created by the number of businesses requesting training grants.

6. State-financed, workplace-based retraining programs may play a major role in encouraging businesses to use training as a strategic change agent and to establish permanent training systems. All project managers reported that the retraining project had put training in a much more positive light. Consequently, upper management was more likely to incorporate training in future plans for making competitive improvements. As other businesses see the successes that are associated with retraining, we believe that state programs can begin to reduce the share of training they pay for and institute stricter in-kind or matching policies to leverage more private-sector investment.

These major findings and conclusions from the feasibility study provide the basis for five recommendations.

1. States should adopt the proposed business screening and performance outcome system as the basis for a more detailed plan worked out by each state in conformance with program statutes, policies, and practices. We found that business and training managers uniformly indicated that the screening and evaluation model had relevance to their own operations and that the data they would be asked to accumulate would be useful in their own evaluations of training projects. In addition, we found that the information was important to the common policy concerns of the four state programs participating in the study.

2. States should recognize that training may occur in three stages: (1) basic skills training, (2) general occupational and vocational training, and (3) job-specific training. In these cases, states should establish intermediate performance objectives for each stage. In the first stage, the company should be asked to show that workers achieved basic skills and, in some cases, introductory technical knowledge. In the second stage, the company should be asked to show that the workers can perform specific functional skills related to ultimate training objectives. In the third stage, the company should be asked to show that training and performance objectives were achieved. However, every multi-stage training project still should be justified in terms of final business goals and performance objectives.

3. States should establish special assistance programs to improve the access of small businesses to state-financed, workplace-based retraining. Such programs should include direct consultation by agency staff, cooperative consultation by business assistance staff

from other state programs, cooperative consultation by faculty or staff at community colleges or state colleges and universities, or a special planning and assistance grant that will lead to the development of specific business and training objectives for a future training proposal to the agency. We do not propose that a special application procedure be instituted on behalf of small businesses. Instead, we propose that small businesses be given access to state training programs through assistance from the staff of the training agency. Effectively, the agency will have to compensate for the limited capacity of the small businesses. Although this may increase significantly the transaction costs incurred by some state agencies in their efforts to reach out to small businesses, these costs are balanced by the value of the state technical assistance. Even if no grant is given, the agency has provided a useful service to the small business.

4. State programs should implement the formative evaluation system through a gradual three-year process:

- Year 1. Implementation of business screening and performance outcome system with: a) an evaluation of the effects of system implementation on program operation including business participation, application screening, and contract management, and b) case studies of a representative sample of training projects on company performance and training objectives.

- Year 2. Refinement of business screening and performance outcome system with a formal follow-up study of a representative sample of training project on company performance, training objectives, and trainee earnings based on unemployment insurance (UI) wage records.

- Year 3. Implementation of the full follow-up system based on a representative sample of training projects. Year 3 should also include the implementation of a system to track and trainee earnings based on unemployment insurance wage records.

5. Federal and state government should cooperate in establishing a resource center for disseminating information on state-funded training project and their role in improving the competitiveness of industry. The resource center also should provide models of comprehensive training systems that combine basic, occupational, and job-specific training.

APPENDIX A

STATE PROGRAMS PARTICIPATING IN THE STUDY

The governors of the fifty states were invited by the National Governors' Association to participate in this study to develop and test an evaluation methodology for state-financed, workplace-based retraining programs. In order to qualify for the study, it was required that the state operate a program that had funded at least six projects that provided the following:

1. The company receiving the assistance had decision-making authority over the content of training, who will provide the training, and how the money will be spent.

2. Formal skills training was provided to current employees away from the normal routines of work.

3. Training of current employees was justified because of changing skill requirements resulting from the introduction of new technology or job restructuring.

4. The purpose of training was tied directly to the clear and measurable goal of improving company performance (e.g., improving quality standards, reducing unit costs) while retraining workers.

5. Financial support of training was justified based on the expectation that, without this support, either the market position and long-term viability of the business establishment or the job security of the specific workers would be adversely affected.

6. Company-specific projects must have been funded within the last two years (1987 and 1988) and the training in these projects must be completed no later than 90 days before the end of the case study period (1989) so that outcomes could be tracked for at least 90 days as part of the evaluation study.

The Illinois Prairie State 2000 Authority and the California Employment Training Panel were selected initially to participate in the study because of the long history and extensive experience of these agencies in retraining projects. They also were key participants in the early planning of the study. Twelve of the 24 case studies were allocated to California because of the large size of the program and the breadth of funding activities; six case studies were allocated to Illinois. The remaining six case studies were divided equally between the remaining two states.

Four other states responded to the request by the National Governors' Association:

New York, Missouri, Minnesota, and Massachusetts. Minnesota was not included because its response came after the deadline. Massachusetts was not selected because the program did not meet all of the criteria set forth by the National Governors' Association.

The four programs vary considerably in scope, size, project selection criteria and organizational structure. Although the missions are quite similar, each was established under circumstances that were special to its state.

California: Employment Training Panel

The California Employment Training Panel was established in 1982 to:

> **foster job creation, minimize employers' unemployment costs, and meet employers' needs for skilled workers by providing skills training to unemployment insurance claimants, recent exhaustees of unemployment insurance who have remained unemployed, and potentially displaced workers who would otherwise become unemployment insurance claimants. It is the intent of the Legislature that all training funded through this . . . . [program] result in jobs for those who successfully complete the training.**

In 1989, effective on January 1, 1990, the California legislature amended the law to provide that the legislature intends that training funded by the panel "should make a substantial contribution to the long-term job security of the trainees."

Previously, the legislature stated that its intent in establishing the Employment Training Panel was "to put unemployment insurance recipients to work by encouraging employers to locate and expand facilities in this state and training unemployment insurance recipients in skills needed by employers." The 1989 amendments to the law add that the legislature also intends the panel "to prevent unemployment by increasing productivity through the retraining of existing employees." These changes follow actual practices of the Panel in large measure inasmuch as the preponderance of the projects that it has funded have been justified on the basis of specific changes in competitive circumstances.

The panel is composed of several members. Four members of the panel are appointed by the legislature: two by the speaker of the assembly and two by the president pro tempore of the senate. Three members are appointed by the governor. The governor also designates the chair from among the members. Until January 1, 1990, the panel hired the executive director, who served at its pleasure, and staff, who are subject to the State Civil Service Act. Beginning January 1, 1990, the executive director is appointed by the governor for a term of four years. Two assistant directors are appointed by the governor. Under prior law they served at the pleasure of the panel. Under current law, they serve at the pleasure of the governor. One assistant director is required to have experience in serving the needs of small businesses, with specified duties, and the other assistant director is responsible for developing and managing the audit and compliance program of the panel.

Prior to 1990, the panel may finance projects that teach people skills that will put them to work or that teach people skills that will keep them from losing their jobs. Grants from the fund were "only for training for employers or groups of employers who assure that those who successfully complete training will be employed." In addition, the panel must have been convinced that the training will move people into careers with long-term job security. It would not, as a matter of policy, train people for "deadend, minimum wage jobs . . . [or] . . . short term or high turnover jobs." Its objective was to "help train people for good jobs that provide a decent living in stable or expanding occupations." The panel wrote performance-based contracts that tied payments to the successful completion of training and 90-day post-training retention. It reimbursed the employer for all actual training costs and reasonable administrative expenses. However, it would not subsidize wages paid to trainees or pay stipends. In the event that the workers receiving training were union members, the panel required that the union first agree to the training before state funds were expended.

The 1989 amendments provide that contracts may be made only for:

> **training in job related basic skills, including literacy skills, and job related vocational skills that are necessary for participants to attain a new job or retain an existing job with definite career potential and long-term retraining; the identification of specific industries, production and quality control techniques, and regions of the state where employment training funds would most benefit the state's economy and plans to encourage training in these areas, including specific standards and a system for expedited review of proposals which meet the standards;**

a system for giving an expedited review of proposals that are substantially similar with respect to employer needs, curriculum, duration, and costs, in order to encourage the development of proposals that meet the needs of targeted industries or geographic areas; the new standards of accountability; "the research objectives of the panel that contribute to the effectiveness of the program in benefiting the economy of the state as a whole;" and "a priority list of skills that are in such short supply that employers are choosing to not locate or expand their businesses in the state or are importing labor in response to these skills shortages. This list should identify those industries in which upgrade training is likely to encourage hiring of the unemployed on a backfill basis."

Previously, the panel was required to give priority to employers and training for employers who are "expanding their business enterprises" in California, "to employers and training for employers who are establishing enterprises in areas targeted for economic development by the [California] Department of Commerce, and to employers and training for employers in industries in which there are critical skills shortages." In addition, contracts for projects involving on-the-job training will have to specify "the specific skills and competencies to be gained as a result of the on-the-job training component of the project." Contracts for new hire training must require the contractor to provide the placement services necessary to ensure that trainees are placed in jobs for which they have been trained.

Finally, the panel is mandated to set standards of accountability for retraining contracts by no later than July 1, 1992, for all contracts (repeat contracts and larger contracts are subject to these standards effective January 1, 1991). These standards will provide that all payments will not be considered earned until the contractor shows that the training has resulted in "measurable productivity or other improvements that result in a new benefit to the California economy. The method to be used for assessing the productivity or other improvements attributable to the training shall be specified in the contract." However, the amendments essentially did not alter the basic requirement that the workers receiving retraining be retained for at least 90 days.

The 1989 amendments also provide that the Panel submit an annual plan beginning July 1, 1990. Each plan will include: "the Panel's objectives with respect to the distribution of funds between new hire training and employers in which there are critical skills shortages." The 1989 amendments require that the Panel give priority to proposals in the following order:

1. New hire training and retraining for workers who have received notification of actual layoff;

2. Retraining of eligible participants employed at the start of training by small businesses;

3. Retraining for workers whose jobs are threatened by increased competition form outside the state;

4. All other proposals."

The panel is required to give special consideration to proposals of new employees of firms locating or expanding in California, to new hire and retraining for firms located in enterprise zones and economic incentive areas, and to training for veterans, and to training which supports approved apprenticeship programs. The panel is mandated to provide technical assistance to encourage the development of these proposals.

Funds for the panel are derived from receipts from a tax imposed on employers. The basis for the tax is identical to California's unemployment insurance tax. Annual appropriations to the panel by the legislature have grown from $26 million in fiscal year 1983 to amounts in excess of $60 million in fiscal years 1986 through 1989. However, total revenues regularly have exceeded their annual appropriations. For example, in FY 1988, total revenues exceeded $104 million, including money carried forward from the preceding year and estimated disencumberances.

Initial panel activities were focused on projects that trained unemployed workers. However, since its inception through June 30, 1987, 53 percent of the projects have trained potentially displaced workers. Another 20 percent of the projects have combined unemployed and potentially displaced workers. The remaining 27 percent of the projects trained only unemployed workers.

Illinois: Prairie State 2000 Authority

The purpose of the Prairie State 2000 Authority is to:

> **establish employment training programs which foster job creation, reduce employer unemployment costs, and meet the needs of the economy for skilled workers by providing job-linked training for unemployment insurance claimants and potentially displaced workers who could become such claimants.**

The authority was established in 1983 under a slightly different name initially to operate a system of individual training accounts. In 1985, the mission of the authority was revised and two programs were added. One program, the Individual Training Assistance Program, was established to provide financial assistance to experienced UI-eligible workers who wanted to upgrade their skills or acquire new ones. This program was made available to workers who were unemployed as well as those who still were working. The second program, the Employer Training Assistance Program, was established "to make grants or loans to eligible employers for the purposes of providing training to employees in fields for which there are critical demands for certain skills." It also provides that the agency provide financial assistance to an employer:

> **1) who will provide job-linked training which offers special skills for career advancement or which is preparatory for, and leads directly to, jobs with definite career potential and long-term job security;**
>
> **2) who is unable to provide sufficient funds internally, or from other available sources, including Federal, State or locally administered employment and training programs; and**
>
> **3) (i) who is expanding its business enterprise in this State, is locating a new business enterprise in this State, is introducing more efficient technology into its operations which will result in greater output per employee, is expanding into new markets, or is expanding exports from Illinois, and is thereby increasing tax revenues for State and local governments; or (ii) whose existing employees are threatened with layoff unless additional training is made available to them.**

In 1989, the Prairie State 2000 Authority was authorized by the General Assembly to assist employers in the preparation of a final needs assessment and in the design of a training program. The cost of the assessment and design may be paid fully by the authority and may be made part of the final grant of training funds.

The authority is governed by a seven-member board. Four members are appointed by the governor with no more than two from the same political party. The other three members are ex officio: the state treasurer, the director of the Department of Commerce and Community Affairs, and the director of the Department of Employment Security. The ex officio members may designate others to attend meetings of the board in their place. The board elects a chair from among the four appointed by the governor. It also appoints the chief executive officer, who serves at its pleasure, and the staff.

In implementing the statute, the authority has used the Employer Training Assistance Program to assist employers to retrain their workers in new process technologies or in new forms of work organization. Pursuant to the statute, the authority requires that the employer demonstrate that it lacks the financial resources to conduct the retraining in a proper or timely fashion. Firms or establishments that are eligible for assistance include those earning little or no profits, or those reinvesting their earnings in their operations. In addition, as a condition of assistance, the authority requires that the firm or establishment making the request provide a reasonable business strategy that incorporates the proposed retraining. Like the California program, if the workers receiving the retraining are union members, the authority requires that the union first agree to the retraining before the grant or loan request may be approved. Apprenticeship and training programs that are specifically the subject of an existing collective bargaining agreement are eligible for funding under the Employer Training Assistance Program. The agency will give grants covering 50 percent of the direct training costs or low-interest loans covering all eligible costs.

Agency performance since fiscal year 1986 shows considerable year-to-year consistency. In fiscal year 1986, the authority issued 48 grants that resulted in retraining for nearly 4,000 workers. Additional grants were made to a major Illinois manufacturer under an experimental program that resulted in another 13,000 workers receiving retraining. In total, over $1 million was spent for employer training assistance. In FY 1987, the agency made 61 grant awards for over $937,000 and seven loans for over $54,000, providing training for 8,500 employees. In FY 1988, the agency made 56 grants ($927,000) and eight loans ($58,000) covering 9,735 workers.

Missouri: The Missouri Customized Training Program

The Missouri Job Development Fund was established by the 83rd Missouri General Assembly (1986) to operate two new programs: the New and Expanding Industry Training Program and the Basic Industry Retraining Program.

The New and Expanding Industry Training Program provides assistance to new or expanding industries by funding the training, retraining or upgrading of skills of potential employees. The program may also assist these industries by locating skilled employees and additional sources of job training funds. The program is funded through general state tax revenues.

Assistance may be given to industries that show that their investments relate directly to a projected increase in employment that will result in the need for training newly hired employees. It may also be given for retraining or upgrading the skills of existing employees for new jobs created by the investments of the new or expanding industry.

The Basic Industry Retraining Program, the subject of this study, is intended to provide assistance to industries in Missouri by supporting retraining and upgrading of employees skills that are required to support new capital investment. Although tied to new investment, manufacturing investment is

not required to result in an increase in employment in order for the industry to qualify for assistance.

The activities that are eligible for reimbursement under either program include: the wages of instructors, regardless of who employs them; training development costs, including the cost of training instructors; training materials and supplies, including packaged training programs; travel directly related to the training program; tuition payments to third party training providers and to the industry; teaching and assistance provided by educational institutions in Missouri; on-the-job training; and lease of training equipment and space.

The program receives oversight by the Missouri Job Training Joint Legislative Oversight Committee. The committee is comprised of six members of the General Assembly. Three members are appointed by the president pro tempore and three are appointed by the speaker of the house. No more than two members for each house may be of the same political party. The committee reports to the General Assembly and the governor on all assistance to industries permitted under the law.

During fiscal year 1988, the Basic Industry Retraining Program obligated $4,678,721 (78 percent of the available combined appropriation for both the New and Expanding Industry Training Program and the Basic Industry Retraining Program) for training at 11 manufacturers. When all sources of state training assistance are considered, the total amount of funds obligated to basic industries in the context of this program was $5,892,755 during FY 1988. The Division of Job Development and Training and the Missouri Department of Elementary and Secondary Education jointly funded nine of these projects in order to meet the retraining needs expressed by the employer. Classroom training was used by eight companies; one company used on-the-job training alone; the balance of the companies used a combination of classroom and on-the-job training. The retraining assistance involved 6,529 workers.

The average grant in the Basic Industry Retraining Program was $425,338 during 1988. This amount, on average, covered retraining costs of 573 people. The average wage of each trainee was $11.72 per hour. The average private sector capital investment associated with the project was $8,812,750.

Excluding three very large project grants, one each to General Motors, Chrysler Motors Corporation, and Ford Motor Company, the average project cost was $56,124 to retrain 417 people. The average wage of workers in these eight projects was $11.07 per hour. Associated average private sector capital investment was reported to be $5,575,437.

New York: Economic Development Skills Training Program

The New York Economic Development Skills Training Program was established in 1987 in response to the challenge presented in the 1987 New York Strategic Plan for Economic Development that the state "make additional and prudent investments in skills development and worker training

programs which address the immediate and future needs of private sector employers." The strategic plan also encouraged new assistance to businesses to increase their productive capacity including programs for upgrading workers' skills to enhance the application of advanced technologies. Finally, the plan pointed to the need for using education and training to address the problems of workers who face long-term unemployment and economic disadvantage because they live and work in one of the many regions in New York with declining economies.

As a consequence, the Economic Development Skills Training Program defines its mission as follows:

> **To assist individual businesses and industries in improving their competitiveness by providing skill training to address their human resource development needs;**
>
> **To provide job skills to enable disadvantaged persons, dislocated workers, and displaced homemakers to benefit from new jobs created through economic development efforts;**
>
> **To upgrade the skills of existing employees in order to assist New York companies and to modernize and improve their operations and to meet the demands of changing technologies and work environments including assistance to employees of firms involved in State financial assistance and industrial effectiveness programs;**
>
> **To provide for increased training services for small businesses in the State, including new small businesses locating in economic development zones and women or minority-owned businesses.**

The Economic Development Skills Training Program may make grants to local training providers, including businesses or trade associations, labor organizations, educational institutions, institutions of higher learning, community based organizations, the grant recipients or administrative entity of a service delivery area, and private industry councils established by the Job Training Partnership Act. Grants are for classroom-based training and on-the-job training.

The program is operated by a unit of the Department of Economic Development. Unlike the Prairie State 2000 Authority and the Employment Training Panel, there is no independent oversight organization or policy-setting body that governs the operation of the program. However, the statute provides that the Commissioner of Economic Development convene an Interagency Review Committee. The commissioner is chair of the committee, which consists of representatives of the New York Departments of Education, Labor, and Social Services, the State University of New York, and the Job Training Partnership Council. Project applications not less than $25,000 are to be brought to the committee for its recommendations on actions that should be taken by the Commissioner of Economic Development. Applications for less than $25,000 in assistance do not require the review of the committee.

Projects involving on-the-job training programs and labor exchange or related functions are executed and monitored by the New York Department of Labor at the

authorization of the New York Economic Development Department. Classroom-based training delivered by local school districts is executed and monitored by the Department of Education. Classroom-based programs delivered by community colleges, agricultural and technical colleges, or public degree-granting institutions of higher education are executed and monitored by the State University of New York or the City University of New York, as appropriate. In addition, the Commissioner of Economic Development has created regional networks in each of the state's 10 economic development regions, involving local experts in the delivery of the Skills Training Program, to bring about greater coordination of resources and increased responsiveness to regional economic development needs and initiatives.

The statute establishing the skills training program requires that one-half of its funds must be used to provide assistance to small businesses with fewer than 100 employees. One-half of the funds must be used to provide skills training to targeted individuals (disadvantaged people, dislocated workers, displaced homemakers). Particular emphasis is given to assist minority- and women-owned firms as well as to train and upgrade the skills of women and minorities for improved employment opportunities. Program staff are required to consult the appropriate labor groups wherever there is a collective bargaining agreement in effect with an employee participating in the program. In addition, notification is given to the appropriate local Private Industry Council for any project funded in its area.

The skills training program operates with an annual appropriation from general state tax revenues of $4.4 million. The Department of Economic Development is mandated by law to work cooperatively with other agencies by sharing responsibility for training costs. Training costs include the direct cost of instruction and may include an on-the-job training wage reimbursement not exceeding 50 percent of the wage costs for a maximum of 12 weeks. Each dollar expended by the program for training must be matched by at least one dollar from other federal, state, local, or private resources. The full amount of assistance to a business may be paid to the applicant only if it has achieved its anticipated outcomes. These outcomes are defined in the project application and may specify, as appropriate, "job placement rates, number of jobs opened to targeted populations as a result of skills upgrading activities, [and] promotions or wage increases for individuals participating in skills upgrading programs." Individual businesses receiving the training also must provide a commitment to hire from among individuals who have successfully completed training.

APPENDIX B

SAMPLING DESIGN AND METHODOLOGY FOR CASE STUDIES

Case Selection Criteria

Following the selection of the four states, we reviewed case descriptions contained in annual reports for Illinois and California--the two programs that had funded a large enough number of cases to permit the application of some sampling design. These cases could be organized into nine types: five types were specific to manufacturing production activities, and four types were specific to service functions, either in service industries or as service support activities within a manufacturing business. In addition, each of these nine types could be separated by size into large and small. The nine categories of cases were as follows (examples of each category of cases are noted parenthetically):

Manufacturing Industry/Activities

1. New Process Technologies, Work Procedures, Supervisory Practices (Simpson; Lawrence Box & Basket; KLM; Arcata Graphics; Pirelli-Armstrong; LA-NTMA; Solar Turbines; AT&T; NUMMI; GM-Wentzville; Dunlop).

2. Quality Control Procedures (Manth-Brownell; Harmon; NUMMI; Pirelli-Armstrong; Lyphomed; Ingersoll Milling Machine).

3. Job Rotation, Job Sharing, Job Enlargement, Cross-Training (Dresser-Rand; Northwestern Steel; AT&T; Manth-Brownell; GM-Wentzville; Solar Turbines; Simpson; Arcata Graphics).

4. Computer Aided Design and Drafting (Unicadd; Metcraft; Solar Turbines).

5. Production and Materials Management (Rohr Industries; KLM).

Service Industry/Administration Support and Services

6. Office Support Automation (Glendale Community College, Pirelli-Armstrong).

7. Merging/Upgrading Management Information Systems (Care Enterprises).

8. New Ordering, Inventory, Processing and Sales Information Systems (Thrifty; Rohr Industries).

9. Management Sales, Service Training for New Products and Services (United Savings Bank).

Following development of the categories of cases, each state participating in the study was asked to provide suggestions of those cases that it considered to be above average. Our purpose in selecting the better cases was based on the assumption that in order for an evaluation system to be considered feasible and to be accepted by the state, it must be applied successfully to at least those cases that the state considered to be a good reflection of the value of the program. This also was in recognition of the fact that, in addition to checking the feasibility of our proposed evaluation system, an important purpose for this study was to give illustrations of the types of projects that these four states were financing in order to help others understand the work of these agencies better.

After we received the suggestions of the states, the companies were contacted by phone by one of the researchers (occasionally representatives from the state agencies also made phone contact) to inform them that their respective states had recommended them for the study. This was followed by a letter explaining the project and containing sample questions, and a schedule was sent to the company contacts identified by the states. The letters and accompanying materials were standardized by size of company. In a few instances, the grant recipient also was visited in order to explain the study and to set the schedule for the site visit.

Several companies refused to participate in the study. Their reasons varied:

- One California food processor refused because it was a closely held company that was adverse to any publicity about its operations.
- One California bank refused to participate because all management and training personnel associated with the training project had left the bank.
- Two California retailers refused to participate and gave no reason.
- Two Illinois manufacturers refused to participate because of scheduling conflicts.
- One Illinois company did not participate because of bankruptcy.
- One New York manufacturer refused to participate and gave no reason.
- One Missouri manufacturer did not participate because of scheduling conflicts.

In addition to these companies refusing to participate, one Illinois company received a site visit but later was dropped from the study. The reason it was dropped was that a needed second site visit could not be scheduled and because of adverse business conditions being experienced by the company.

Site Visit Procedures

The site visit generally was spread across two days, not necessarily consecutive days. Two companies refused to permit more than one visit; four companies--two with fewer than 15 employees--required only one site visit. Each visit began with an orientation interview and company tour with the principal contact at the company, usually the training manager (in the case of

small companies, this was the company owner). Often this interview and tour required two hours. Following the orientation interview, interviews were requested of upper management (in the cases that it was not the company contact), supervisory personnel, workers receiving the training, the training provider, and union officials (if appropriate).

Although all companies participating in the study were cooperative, we were not successful in every instance in conducting all the necessary interviews. Often we were unable to interview the training provider because it no longer was providing services to the company and could not be brought in for the study. Upper management also was not interviewed on occasion. The usual reason was that the managers that were present at the time the training occurred either had left the company or were transferred to another facility. Union officials were not interviewed in those instances where the participation of the union was incidental to the training project (i.e., the approval of the union was received for purposes of the training grant but it took no active role in any aspect of the training project).

Following the site visits, each company was contacted by letter or by phone for additional information. It was requested to provide specific information about performance indicators and changes in performance, the competitive strategy of the firm, the organizational structure of the company, and facts that were unclear or appeared inconsistent with each other.

Case write-ups were based on the information collected in the interviews or provided by the company and from the case files of the state training agencies. Each company received a copy of the write-up for the company and was asked to review it for factual errors and to identify any information that it considered proprietary. Such proprietary information would be adjusted so that it would not reveal trade secret information and still make the point about the change in performance indicators associated with the training intervention. Following company approval of the case write-up, all cases were submitted to the respective states for their review and approval.

APPENDIX C

IMPACT EVALUATION OF RETRAINING PROGRAMS

Impact evaluation addresses the most fundamental evaluation question in public programs. It addresses the validity of the intervention model. It assesses whether desired outcomes are different from what would be expected without the program and whether these outcomes can be attributed to program interventions. In the case of state-financed, workplace-based retraining programs, impact evaluation would address whether worker retraining increased job retention and reduced unemployment.

Despite the importance of impact evaluation, this type of evaluation is very difficult to do for most ongoing employment and training and economic development programs. Net impact evaluations are rare in state economic development programs. The history of net impact evaluation in employment and training programs has been marked by a continuing debate on the relative strengths and weaknesses of experimental versus quasi-experimental research designs. This appendix summarizes project findings on the impact evaluation of retraining programs using experimental and quasi-experimental designs.

Experimental Designs

Experimental designs require the random selection of program participants from a pool of eligible potential participants. Random assignment has been controversial in employment and training programs but has been used extensively in the evaluation of JTPA programs and welfare-for-work demonstrations. The major disadvantage in using experimental designs for retraining programs is that they would require that programs deny or significantly delay services to a random set of businesses.

Random selection would be extremely difficult to implement in state-financed, workplace-based retraining programs. These are relatively new programs that continually confront sensitive decisions on which businesses should receive state retraining funds. Most state programs are in the process of defining new targeting and screening guidelines in the face of a growing business demand for training funds. Establishing impact evaluation systems based on random selection would probably be detrimental to the future development of these programs. Random

selection may be an option in the future as programs develop clear targeting and screening guidelines and programs receive a stable level of business funding applications that exceed the money available for retraining assistance.

Quasi-Experimental Designs

Quasi-experimental designs develop matched control groups for comparison with program participants. Although random assignment provides a stronger evaluation design with more internal validity, quasi-experimental designs are sometimes more practical because they do not require denial or delay of services and can be conducted without major intrusion into a program. Although comparison group designs have been used extensively in the evaluation of employment and training programs (e.g., Barnow, 1986; State of Washington, 1987), they have yet to be developed for economic development programs, especially programs that retrain employed workers. One exception has been a series of studies for California's Employment Training Panel using non-completors as a comparison group for evaluating worker earnings gains (Training Research Corporation, 1987). Michigan also is exploring comparison group designs for evaluating business performance improvement using businesses that had applied to its retraining programs after all money had been obligated for the fiscal year.

Quasi-experimental impact designs face four major problems in addressing retraining programs. The first major problem is developing comparison groups of businesses and workers. There currently is not a comprehensive data source in states for developing a comparison group of businesses that is similar in all key characteristics to businesses participating in state programs. Employment security business files (i.e., ES202) provide a comprehensive data source for matching by industry and size but do not contain other essential information that can insure the comparability of groups. Some states may be able to build comparison groups from businesses whose applications are being held over to the following year because of lack of funds. However, this will not be practical in all states. In addition, businesses may receive funding as soon as six months later in the beginning of the next fiscal year. This may be too short of a delay period to assess what businesses would have done on their own without state funding assistance. Third, businesses that do not receive state funds for retraining workers may not be willing to provide reliable information on training efforts and company employment and performance. Business surveys generally have a much lower response rate than worker surveys that track employment and earnings. Fourth, previous research on worker retraining has yet to identify the major business and worker characteristics that must be considered in estimating the impact of public programs. Impact studies of employment and training programs can rely on a long history of labor market research to identify critical causal factors that explain employment and earnings. This is not true for impact evaluations of programs that retrain employed workers.

In summary, we conclude that impact evaluation systems based on either experimental or quasi-experimental designs are not feasible at this time for

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state-financed, workplace-based retraining programs. States should concentrate most of their efforts on developing a process monitoring and performance outcome assessment system. However, because of the importance of impact evaluation, states should sponsor special evaluation studies that can provide the foundation for a future impact evaluation system for retraining programs.